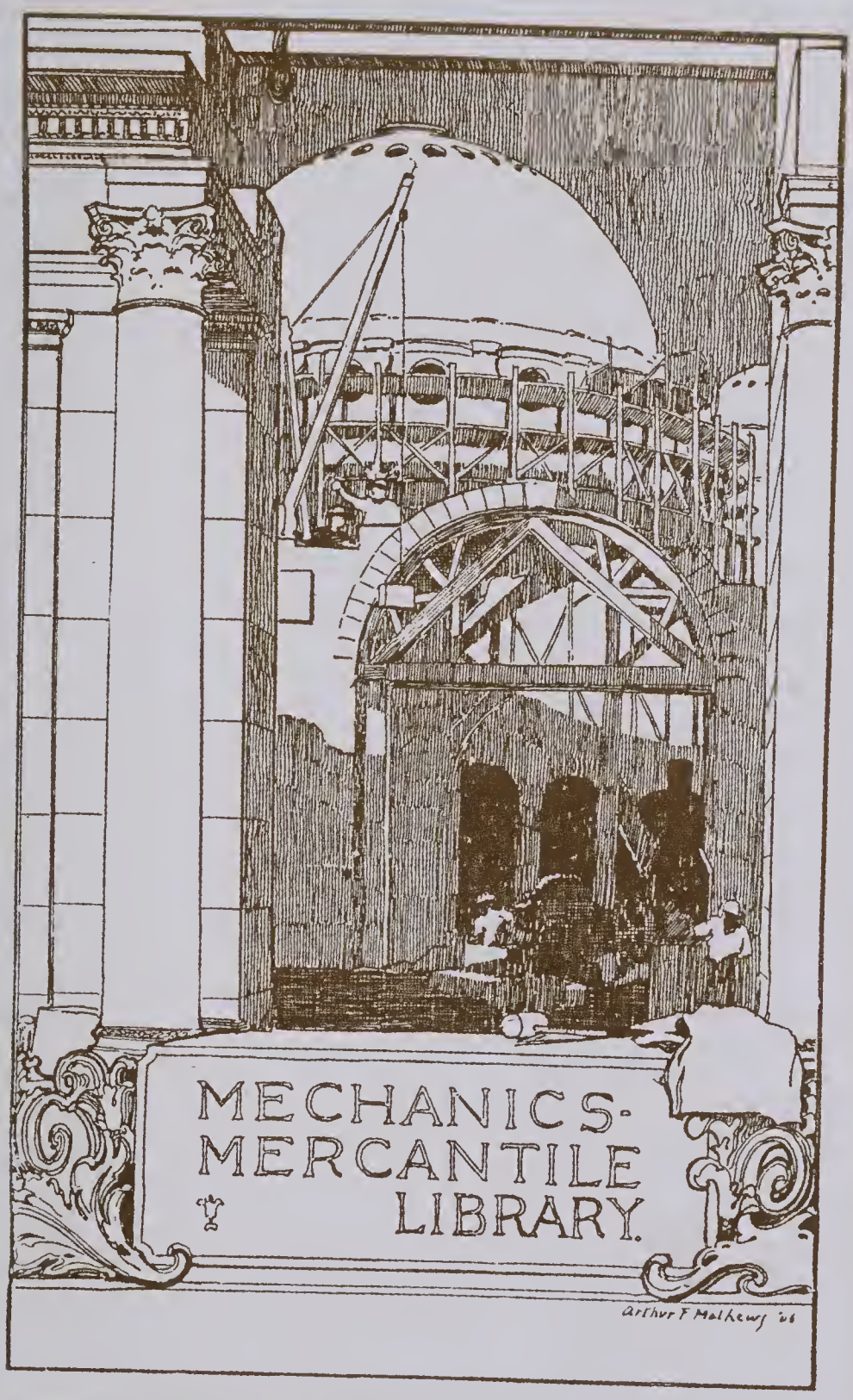
REPORT
OF THE
NINTH INDUSTRIAL EXHIBITION
OF THE
MECHANICS' INSTITUTE
SAN FRANCISCO



REPORT

OF THE

Ninth Industrial Exhibition

UNDER THE AUSPICES OF THE

MECHANICS' INSTITUTE,

OF THE

CITY OF SAN FRANCISCO,

Held at the Pavilion of the Institute, Mission and Eighth Streets, from the 18th day of August to the 3d day of October, 1874.

SAN FRANCISCO:

C. W. GORDON, BOOK AND JOB PRINTER, 326 SANSOME STREET.

1874.

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THE

MECHANICS' INSTITUTE,

ORGANIZED MARCH 29, 1855.

Incorporated December 6th, 1869.

BUILDING OF THE ASSOCIATION, No. 27 POST ST.

LIBRARY HOURS, 9 A. M. TO 10 P. M.

Terms of Membership:

Initiation Fee, on entering, - -	$1.00
Quarterly Dues, in advance, - - -	1.50
Life Membership, - - - -	50.00

(Entitling the person to all the Privileges of Membership.)

Officers—1874.

A. S. HALLIDIE, PRESIDENT.

P. B. CORNWALL, VICE-PRESIDENT.

H. L. DAVIS, TREASURER:

W. P. STOUT, RECORDING SECRETARY.

JAS. SPIERS, CORRESPONDING SECRETARY.

Trustees.

GEO. SPAULDING,	A. R. WELLS,	CHARLES ELLIOT,
JAS. C. PATRICK,	J. H. MACDONALD,	J. P. CURTIS,
R. SAVAGE.	R. B. WOODWARD,	D. E. HAYES.

PRELIMINARY ANNOUNCEMENT

OF THE

TENTH INDUSTRIAL EXHIBITION,

SAN FRANCISCO, 1875.

The Board of Managers of the Tenth Industrial Exhibition have the pleasure of announcing that an Industrial Exhibition will be held under the auspices of the Mechanics' Institute, in the city of San Francisco, to be opened on Tuesday, the 17th of August, 1875, at 11 A. M., and to continue open at least one month thereafter.

In making this public announcement, the Managers desire that those who intend to exhibit should send in their applications for space as early as possible, so as to avoid the necessity of excluding, as has been the case heretofore, the many desirable exhibitors who are unusually tardy in making applications.

The forthcoming Industrial Exhibition will be the tenth held under the auspices of the Mechanics' Institute, and the Managers are justified in saying that it will undoubtedly surpass in completeness of detail and general arrangement any heretofore held.

The last Exhibition was attended by 700,000 visitors, attracted hither by the fame of these Industrial Fairs, and for the purpose of investigation, business and pleasure.

All the available exhibiting space was applied for several weeks before the day of opening, and the Managers were compelled to deny admission to many desirable exhibits.

The Board of Managers desire particularly that the arts, the industries and natural products of the country should be well represented at the forthcoming Exhibition, and no pains will be spared to make these classes of exhibits a special feature there.

The Exhibition will be held in the building constructed for that purpose in 1874, but it will be materially enlarged and improved in many details for the Exhibition of 1875.

The space under roof will exceed 180,000 square feet, or about four and a half acres, exclusive of the Horticultural Garden, which will occupy 24,500 square feet additional.

The location of the Exhibition Building, on Eighth street, between Market and Mission streets, cannot be surpassed for convenience and accessibility, and can be approached from every part of the city by means of the various lines of street railroads, any of which bring visitors within two blocks of the entrance gate.

The utmost care has been exercised in providing for ample ventilation and light, as during the evening the building is brilliantly illuminated by over 5,000 gas lights.

The promenade avenues are broad, and 3,000 seats are provided for the comfort of visitors, for whose convenience there is also an excellent restaurant, under the management of a first-class restaurateur.

Every afternoon and evening the best orchestra the city can supply will discourse excellent music under the direction of an accomplished leader.

The building is always well attended by visitors, and during the last Exhibition over 29,000 were daily admitted for a number of days, and under no similar circumstances can the manufacturer, the mechanic, the inventor, producer or business man so advantageously place himself before the people of the Pacific Coast.

Persons desiring to obtain information, or to make application for space, should address "Managers of Tenth Industrial Exhibition, San Francisco, California," or make personal application as below.

It is expected that the various transportation companies will convey goods intended in good faith for exhibition, at half the usual rates.

Exhibitors from abroad, if they have no agent or consignee in San Francisco, can consign goods and mark the same to the "Managers of the Tenth Industrial Exhibition, 27 Post street, San Francisco," and they will be stored, if they arrive before the day of opening, free of expense; but no charges or expenses for freight or forwarding, etc., will be paid by the Managers.

In order to secure space, application should be made on or before July 20th, 1875.

Blanks will be furnished on application.

Premiums will be awarded as follows, viz: 16 gold medals, 50 silver medals, Society Diplomas, Certificates of Merit, and Special premiums, as the Board may determine.

Blanks for space can be obtained at the Mechanics' Institute on application by letter or otherwise; and any information will be given, by applying to any member of the Board of Managers, as below :

A. S. Hallidie, ... 113 Pine Street.
James C. Patrick, ... 122 Battery Street.
Henry L. Davis, ... 421 California Street.
D. E. Hayes, ... 213 Fremont Street.
Asa R. Wells, ... Mechanics' Mill.
P. B. Cornwall, ... Spear Street, corner Harrison.
Charles Elliott, ... 516 California Street.
George Spaulding, ... 414 Clay Street.
Richard Savage, ... 139 Fremont Street.
W. P. Stout, ... 604 Merchant Street.
J. H. Macdonald, ... 217 Spear Street.
J. P. Curtis, ... 320 Jackson Street.
R. B. Woodward, ... Woodward's Gardens.
Jamer Spiers, ... 311 Howard Street.

To the Librarian of the Mechanics' Institute, or

J. H. CULVER, Secretary,

27 Post Street, San Francisco.

RULES AND REGULATIONS OF THE TENTH INDUSTRIAL EXHIBITION, MECHANICS' INSTITUTE, SAN FRANCISCO, 1875.

1. The Pavilion will be open for the reception of goods on Monday, August 2d. The Exhibition will be open to the public on Tuesday, August 17th, at 11 o'clock, A. M.

2. Applications for space must be made on or before July 20th, stating character of exhibit, amount and kind of space required—wall, table or floor. And, if cases, state length, width and height of case. Blanks will be furnished for this purpose, and a clerk will be in attendance at the Library of the Mechanics' Institute, every day from 12 to 1, and 7 to 10 P. M.

3. All persons presenting articles for exhibition must have them registered by the Receiving Clerk, who will give a receipt for the same, which receipt must be presented when the articles are withdrawn, at the close of the Exhibition.

4. Judges will be appointed by the Board of Managers, immediately upon the opening of the Exhibition, to examine all articles presented, in accordance with Article III, and the Managers will award premiums on such articles as the Judges shall declare are worthy, which will be delivered as soon as they can be prepared. Due notice will be given of the announcement of premiums.

5. The mornings of each day, until 10 o'clock, will be appropriated to the Judges, and no visitors will be admitted during the time thus appropriated, except at the special request of the Judges, or by permission of the Managers.

6. Articles intended for sale may be labeled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Managers.

7. Steam power will be provided, so that machinery of all kinds may be seen in actual operation, and every facility possible will be given to exhibit working machinery to the best advantage.

8. The name of every article must be attached by the exhibitor to it.

9. Articles intended for exhibition must be entered and placed on exhibition on or before Saturday, August 21st.

10. Perishable articles will be received, or may be removed at any time during the Exhibition, with the consent of the Managers.

11. The most effectual means will be taken, through the agency of the Police and otherwise, to guard and protect the property on exhibition; and it will be the purpose of the Managers that all articles shall be returned to the owners without loss or injury. Still, all articles deposited will be at the risk of the owners.

12. In case of any misunderstanding, application may be made to the Managers who will at all times be in attendance.

13. The Managers are desirous that articles should be presented early. Those from abroad, intended for exhibition, should be properly packed, and if not consigned to exhibitor's agent, must be marked, "Managers of Tenth Industrial Exhibition, San Francisco, California." All articles thus received, arriving too early, will be stored free of cost to the exhibitor, and the Managers will have them duly placed in proper position for exhibition. No freight charges will be paid by the Managers; but exhibitors are notified that arrangements are being made with various transportation companies to repay freight charges on evidence of goods exhibited.

Information will be furnished by addressing "Managers of Tenth Industrial Exhibition, San Francisco, California."

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*The MS. report on the Art Gallery was unhappily lost, too late to be replaced.

REPORT OF THE BOARD OF MANAGERS

OF THE

NINTH INDUSTRIAL EXHIBITION

OF THE

MECHANICS' INSTITUTE, 1874.

To the Board of Trustees of the Mechanics' Institute.

Gentlemen:

The Ninth Industrial Exhibition having closed, and the reports of the various committees being now in, we beg to make our report of proceedings and transactions connected therewith, and respectfully refer you and all interested to the proceedings of this Board, and the account books of financial transactions, for the closer detail and minutiæ which could not well be transferred to this report; but a resumé of the earlier proceedings might not be inappropriate here.

The Eighth Industrial Exhibition closed September 7th, 1871, and immediately after its close the building erected on Union Square in 1869, and in which the two preceding exhibitions were held, had to be removed. That building was constructed previous to the revision of the Constitution and By-Laws governing the Mechanics' Institute, and in fact previous to the legal incorporation of the Society. The revised By-Laws gave no power whatever to the Trustees of the Mechanics' Institute to borrow money or incur a debt for any such purpose as the holding of Fairs, and wisely, too, there being in the opinion of the members a liability of encumbering the property of the Society which should be avoided.

In view of this fact the Board of Managers was organized, being a distinct body, and for whose acts the Mechanics' Institute was in no way responsible. The Board of Managers, as at present constituted, consists of the undersigned, who, in reporting the close of the Ninth Industrial Exhibition, feel grateful that the labors of that Exhibition are at an end, and gratified at the results thereof. The Board of Managers, and the individual members thereof, throughout the entire work, the signing of the contracts, borrowing of temporary interest-bearing loans, etc., have been personally responsible as sureties to the amount of eighty thousand dollars and upwards, and upon their faith in the interest the generous public of San Francisco take in the welfare of our beloved institution, the Mechanics' Institute; however much the prepa-

ration and progress of the work may have caused deep anxieties, sleepless nights and neglect of our own affairs, the Managers while drawing a deep inspiration of relief at the termination of their present labors, see with satisfaction and pleasure the prospect of future triumph from past successes that will enable them, they trust, to turn over to the Mechanics' Institute an Exhibition building clear of incumbrances, and with it a good measure of financial profit besides.

The site on which the building was constructed was selected only after a careful examination of the many available locations offered to the Managers, and a careful consideration of the terms on which a suitable lease could be obtained. The conditions of the lease were most favorable, owing to a generous feeling towards the Institute on the part of Mr. Andrew McCreery, the lessor, and an appreciation of the benefits that would accrue to the property from its occupancy by such an institution. The Managers have to pay taxes and all street assessments for the term of five years from January 1st, 1874, and with the privilege of one year additional by the payment of a bonus of $7,500.

It was expected that the street railroad companies (of which there are six) that approached the building would help the enterprise by contributing liberally towards it, but no assistance was received from them, the whole enterprise receiving the cold shoulder. Pending the negotiations the work of preparation was suspended, which caused a delay of five or six weeks. It was then determined to borrow from the citizens at large, on the faith of the success of the Exhibition, sixty-five thousand dollars, and the Managers called upon them and many corporations with this end in view, but after many weeks of patient and persevering application, the sum of forty-six thousand two hundred and fifty dollars in cash, and six thousand two hundred and eighty dollars and seventy-five cents in material were finally raised.

Meantime the plans for the building were matured, and the contract, amounting to sixty-nine thousand seven hundred dollars, was signed between Mr. James Drury and some members of the Board of Managers, who assumed the responsibility.

The services of Mr. J. H. Gilmore had already been secured in soliciting exhibits. In anticipation of the completion of the building, contracts were entered into for the lighting of the same, for the making and erecting of the necessary boilers, shafting, etc., etc., the Managers borrowing on their personal note twenty thousand dollars for these purposes. As the Managers had announced that the Exhibition would open on the 18th of August, the utmost energy had to be exercised to keep faith, as heretofore, with the public. As a matter of record, we take pleasure in stating that the contractor fulfilled his contract in its spirit and letter, and to the entire satisfaction of the Managers.

The building is situated on Eighth street, between Mission and Market streets. It is in plan a rectangle, being five hundred and forty-one feet on the longer sides by two hundred feet on the shorter. A center nave of one hundred feet clear span, four hundred and forty-one feet long and eighty-seven feet to apex of roof, is entirely surrounded by two story building fifty feet wide, each story twenty feet high, giving a floor area of one hundred and seventy-two thousand one hundred feet, besides the boiler house forty

by eighty, making three thousand two hundred feet, or one hundred and seventy-five thousand three hundred feet in all. In the construction of the building about two million feet of lumber and timber were used; all the posts were set on brick piers, and care has been taken that the foundation should not be exposed to unnecessary decay. The building is from the design of Mr. David Farquharson; it has been favorably criticised and generally admired. It is provided with all of the necessary adjuncts for the purpose intended; two sixteen feet by fifty-two inch boilers, a line of main shafting two hundred and forty feet long, furnished with driving pulleys, gas and water pipes throughout the building, the Frink system of reflectors being employed in lighting.

Necessarily the immediate time and attention of the Board of Managers were consumed in providing ways and means and erecting the building. Previous to the opening of the Exhibition, the Board of Supervisors granted permission to the Managers to lay tracks on Eighth street to connect the various lines of horse cars. The Managers proposed to the companies to extend to them all the benefits derived from this permission, but they did not deem it best to take advantage of the concession. On the day and hour appointed, viz., 18th August, 11 A. M., the Ninth Industrial Exhibition was duly opened; the Rev. Dr. Scott delivering the prayer, and Col. W. H. L. Barnes delivering the oration, before the largest and most attentive audience ever assembled at the opening exercises.

Some time before the date of opening all the available space had been applied for, which insured success in spite of many discouragements encountered. Within four or five days after the opening, most of the exhibitors had their spaces arranged and the Exhibition was fairly under way.

A new system of identifying tickets was introduced by Messrs. Wells and Spaulding, which worked exceedingly well and was the means of saving a large sum to the Exhibition. When it is remembered that the only source of revenue available to the Managers outside of the sale of privileges, is derived from the sale of admission tickets, and the prices of these tickets are so low that any one can afford to buy them, it does seem a very small business, a contemptible act of small swindling, for any one to attempt to pass in on a fraudulent or borrowed ticket.

The Exhibition continued open for forty-one days, during which time nearly six hundred thousand persons passed the entrance door. On several occasions the attendance exceeded twenty-three thousand per day, and on one occasion it reached twenty-nine thousand five hundred—the largest attendance ever known at any Exhibition held in this city.

There were no premiums awarded for exhibits, and a great many small exhibitors, those who place in competition tidies, shell work, knitted goods and fancy wares, did not come in. The total number of exhibitors was consequently much less than heretofore, but there was a marked increase in the number of exhibitors requiring large amounts of space.

The location of the building being much more remote than heretofore from the center of business, many feared that the attendance would not be as large, and some of those who had previously exhibited did not exhibit at this Fair in consequence. However, the result proved the groundlessness of

these fears; not only was all the space taken before the opening of the Exhibition, but the attendance of transient visitors surpassed that of any previous one, showing that the location was a good one, and the attractions fully up to previous efforts.

The exhibits showed an encouraging improvement and steady progress in the various branches of manufactures and the development of natural resources, and in relation to which reference is made to the accompanying reports of the various classes of exhibits at the Ninth Industrial Exhibition.

The rapid and successful development of manufactures in iron is exceedingly striking, and the visitors to the late Exhibition, at all interested in this branch, could not avoid the reflection that California needs but the successful working of her ores of iron, cheap transportation and free competition, to make her the most prosperous and independent State in the Union.

While the older manufacturing cities of the East are well provided with elaborate and expensive tools for manufacture of special articles, and with which San Francisco cannot yet compete, the artisans and mechanics of California do not fear rivalry, but invite their Eastern brethren to bring on their most carefully constructed machines to enter the field in open competition.

The lighting of the building during the evening occupied the thought and attention of the Managers, and it was decided to use reflectors in order to economize the light consumed. The cost of putting in the gas fixtures and piping was very great, but the building was better lighted than heretofore, and visitors and exhibitors generally expressed themselves pleased at the result. This was one result of reflection, but another result is, the conviction that our gas bills were simply enormous, and the rate charged, viz., three dollars and fifty cents per thousand, outrageous. During the term of the Exhibition there were consumed one million five hundred and eighty-one thousand feet of gas, at a cost of five thousand five hundred and thirty-three dollars and fifty cents, and one of the peculiarities of the gas furnished was, that when its illuminating power was the weakest the consumption was always greater in proportion. In this, in the transportation of goods to be exhibited, and in other matters that serve as feeders to the success of the Exhibition, the Managers believe that a spirit of discreet liberality, wisely carried out, will, through aiding these Industrial Exhibitions, benefit the city of San Francisco, the various industrial enterprises, and add to the general prosperity of the State. It is in the spirit of aid to the material resources of the country that men are found ready to carry the burden of these Industrial Exhibitions, and in that spirit, and with that view, we ask those who have the means, to aid.

If one wishes to measure the progress of this city and the State, what better gauge can be taken than the relative value in these various details of the past Exhibitions. For instance, the superficial area of floor room of the various buildings is as follows: in 1857, 20,000 feet; 1858, 25,000 feet; 1864, 55,000 feet; 1865, 61,000 feet; 1868, 75,000 feet; 1869, 87,000 feet; 1871, 100,000 feet; 1874, 175,300 feet. The Art Galleries alone of the present building had a floor area exceeding the whole of the Exhibition building of 1857 by 2,200 feet.

Of the tickets sold and amount realized at the various Exhibitions (not including the third Exhibition) the following table is of interest:

	Double Season.	Single Season.	Childr'n's Season.	Adult Single Admission.	Children's Single Admission.	Total Tickets Sold.	Total Receipts from Sale of Tickets.
1857....	957	....	....	29,091	....	30,058	$19,330 50
1858....	707	....	....	18,866	....	19,573	12,968 00
1864....	2,491	692	78	42,338	2,796	48,395	36,516 00
1865....	2,024	593	113	27,665	1,618	32,013	26,318 50
1868....	4,592	1,383	325	51,711	7,830	65,841	55,409 33
1869....	4,242	1,682	410	63,685	8,631	78,650	60,871 25
1871....	5,216	1,487	704	49,209	6,921	63,537	58,083 75
1874....	6,547	1,553	777	77,208	11,752	97,837	80,101 50

It will be seen by reference to the foregoing that there were nineteen thousand one hundred and eighty-seven more tickets sold, and nineteen thousand two hundred and thirty dollars and twenty-five cents more cash taken, for admissions than at any preceding Exhibition. This result was beyond our expectations, and is exceedingly satisfactory. When we consider that the Exhibition is situated one and a half miles further from the center of business than heretofore, it is strongly indicative of the growth of this city.

From the Treasurer's Report, herewith appended, it will be seen that the financial statement of the Ninth Industrial Exhibition is as follows:

Cost of Building is	$77,379 03	
Fitting up the same	28,808 23	
Running and Contingent Expenses	27,420 05	
Total Disbursements	$133,607 31	
Total Receipts	84,684 26	
Deficiency		$48,923 05
The receipts and disbursements on account of the Carnival Ball are as follows:		
Disbursements	$13,170 22	
Receipts	10,372 75	
Deficiency		2,797 47
Total deficiency—Exhibition and Ball (to which must be added the cost of printing the reports)		$51,720 52

For which we have the building fitted up for the next Exhibition, and furnished with seats, and so altered through the Carnival Ball as to be in condition to rent for grand balls or concerts. It is believed that with average success the next Exhibition will leave the building nearly clear of debt.

The value of the cash loans which bear no interest, and were loaned on the faith of the success of the enterprise, cannot be well estimated. It was these loans that decided the Managers to proceed with the work, and the encouragement extended to the enterprise by the gentleman who was first approached and who at once subscribed five thousand dollars (Mr. William C. Ralston we allude to), gave heart to the work that up to that time had been full of discouragement. To him, and to the forty-nine other subscribers to the loan, which aggregates fifty-two thousand five hundred and thirty

dollars and seventy-five cents, the Managers feel that the public owe a debt of gratitude. The names of the subscribers are to be found in the Treasurer's Report. The Managers have now a first-class Exhibition building, fully equipped, and with slight modification, ready for another Exhibition in the fall of next year, preparations for which will be at once commenced.

In view of the Grand Centennial Exhibition to be held in Philadelphia in 1876, it may not be advisable to hold an Industrial Exhibition in San Francisco, but as the lease of the ground on which the building now stands does not expire until December 31st, 1879, three Annual Exhibitions can be held after the Centennial.

The Managers attest the fidelity with which the affairs of the Ninth Industrial Exhibition were administered by the Superintendent, Mr. J. H. Gilmore, and the Secretary of the Board, Mr. J. H. Culver, to whom it would be difficult to find equals. The Managers are under obligations to the Handel and Haydn Society, for their valuable and gratuitous services at the opening ceremonies; to the San Francisco Art Association, for their co-operation and aid in the Art Department, as well as to Mr. Pietro Mezzara in that department and in the decoration of the Hall; to Mr. J. M. Keeler for the loan and use of fountains and statuary; to Hon. William T. Garratt for use of fountains; also to Leon R. Meyer for use of marble fountain. To Hall's Safe and Lock Company the Managers feel deeply obliged for the use of large and valuable safes and the cartage of the same. To Colonel J. P. Martin, Quartermaster U. S. A., and Messrs. Cox and Taylor, Agents of the Pacific Mail Steamship Company, we are under deep obligations for the use of flags and banners used in decorating the building; also to Messrs. Plum & Bell for the loan of a flag. To the City Railroad Company we are indebted for the freedom of the streets from dust, due to their gratuitous sprinkling of the same; and to the very many friends whose acts and names would lengthen this report too far, we tender our thanks.

From its organization to the date of this report, the Board of Managers have had seventy-four meetings, the proceedings of which have been kept in full; the reports of the various committees are on file, and a full set of account books, showing the smallest financial transactions, can be consulted by any member who desires to refer to the same.

All of which is respectfully submitted.

A. S. HALLIDIE, PRESIDENT.
P. B. CORNWALL, VICE-PRESIDENT.
HENRY L. DAVIS, TREASURER.
JAMES SPIERS, COR. SECRETARY.
ASA R. WELLS.
CHARLES ELLIOT.
GEORGE SPAULDING.
RICHARD SAVAGE.
JOHN H. MACDONALD.
JOHN P. CURTIS.
ROBERT B. WOODWARD.
W. P. STOUT.
JAMES C. PATRICK.
D. E. HAYES.
J. H. CULVER, RECORDING SECRETARY.

Financial Statement of the 9th Industrial Exhibition.

MECHANICS' INSTITUTE,
SAN FRANCISCO, November 28, 1874.

To the President and Board of Managers of the Ninth Industrial Exhibition, 1874:

GENTLEMEN: Herewith I submit my report of the receipts and disbursements on account of the Ninth Industrial Exhibition, 1874. Also a Ticket Report, showing each class, and by whom sold.

Respectfully yours,
HENRY L. DAVIS, Treasurer.

DAILY RECEIPTS AT THE DOOR.

1874.	DOUBLE SEASON TICKETS.	SINGLE SEASON TICKETS.	CHILD'NS SEASON TICKETS.	ADULT SINGLE TICKETS.	CHILDREN'S SINGLE TICKETS.	EXCURSION	TOTAL.
August 18...	991	291	113	904	35	.....	$6,458 25
" 19...	360	129	64	552	46	.....	2,570 50
" 20...	398	99	57	821	66	.....	2,799 50
" 21...	319	73	60	916	107	.....	2,388 75
" 22...	550	95	101	2,471	452	.....	4,535 00
" 24...	258	94	38	1,560	160	.....	2,449 00
" 25...	209	64	23	1,802	185	.....	2,218 75
" 26...	139	52	23	2,060	227	.....	1,972 25
" 27..	137	27	12	2,008	216	.....	1,847 00
" 28...	81	30	13	1,781	224	.....	1,461 00
" 29...	165	36	28	4,222	1,125	.....	3,367 25
" 31...	59	29	7	1,992	234	.....	1,447 00
Sept'r 1...	58	24	6	2,085	216	.....	1,467 50
" 2...	39	13	6	2,190	205	.....	1.389 25
" 3...	26	7	2	2,311	277	.....	1,378 75
" 4...	20	1	1	2,105	297	.....	1,231 25
" 5...	27	7	5	4,617	1,244	80	2,803 00
" 7...	13	9	1	1,861	224	.....	1,080 00
" 8...	13	1	1	1,931	188	.....	1,082 00
" 9...	15	2	1	2,712	250	.....	1,501 00
" 10...	11	.....	.....	2,268	220	.....	1,244 00
" 11...	4	1	.....	2,256	270	225	1,274 75
" 12...	8	.....	2	4,327	994	.....	2,455 00
" 14...	6	1	1	1,395	156	.....	771 00
" 15...	3	1	1	1,506	146	.....	809 00
" 16...	2	.....	.....	1,626	139	.....	857 75
" 17...	1	.....	.....	1,657	185	.....	879 75
" 18...	1	1	.....	1,337	153	.....	714 75
" 19...	.....	.....	.....	2,762	530	.....	1,513 50
" 21...	.....	1	1	1.294	173	.....	694 75
" 22...	1	.....	.....	1,049	163	.....	570 25
" 23...	.....	1	.....	1,111	209	.....	610 75
" 24...	.....	.. ..	1	1,240	230	.....	679 00
" 25...	1	.....	.....	1,046	233	.....	586 25
" 26...	.....	.....	.....	2,141	380	.....	1,165 50
" 28...	.....	1	.....	853	76	.....	448 50
" 29...	.....	.....	.....	895	73	172	508 75
" 30...	.....	.....	.....	638	62	.....	334 50
October 1...	.....	.....	.....	2,008	204	4	1,056 00
" 2...	.....	.....	.....	1,517	211	.....	811 25
" 3...	.....	.....	.....	3,373	486	.....	1,808 00
TOTALS.....	3,915	1,089	568	77,208	11,271	481	$65,236 00

ACCOUNT OF TICKETS SOLD, AND BY WHOM.

NAMES.	DOUBLE SEASON.	SINGLE SEASON.	CHILD'NS SEASON.	ADULT SINGLE.	CHILD'NS SINGLE.	EXCURSION.	AMOUNT.
H. J. Ladd, Clerk...	3,915	1,089	568	77,208	11,271	481	$65,236 00
E. W. Hitchings.....	450	40	.....	.....	.....	.....	2,370 00
G. C. Hurlbut.....	359	76	.....	.....	.....	.....	2,023 00
H. Bruns.....	208	33	2	Currency.	.....	.....	1,142 00
Anders'n&Randolph	105	23	.....	.....	.....	.....	594 00
Horace Beach.....	82	7	.....	Currency.	.....	.....	431 00
A. S. Hallidie.....	81	5	.....	.....	.....	.....	420 00
George Spaulding...	80	18	.....	$20 cur'cy	.....	.....	454 00
David F. Macy.....	93	16	.....	... ...	.....	.....	513 00
Sherman & Hyde.....	75	28	.....	.....	.....	.....	459 00
G. C. Shreve & Co..	67	14	.....	.....	.....	.....	377 00
H. L. Davis...	80	11	.....	....	..... .	.....	433 00
J. C. Patrick.....	62	5	.....	.....	.....	.....	325 00
W. P. Stout.....	61	8	.....	.....	.....	.....	329 00
J. H. Macdonald.....	55	.....	.....	.....	.....	.....	275 00
Braverman & Levy...	50	24	.....	.....	.....	.....	322 00
Hinckley & Co.....	50	6	.....	.....	.....	.....	268 00
W. H. Rattenberry...	56	4	.....	.....	.....	.....	292 00
Asa R. Wells.....	47	4	.....	.....	.....	.....	247 00
John P. Curtis.....	45	5	.....	.....	.....	.....	240 00
James Dowry.....	42	4	.....	.....	.....	.....	222 00
M. Gray.....	41	11	.....	.....	.....	.....	238 00
W. C. Dougherty....	34	4	.....	Currency.	.....	.....	182 00
W. F. De Forrest....	34	4	.....	.....	.....	.....	182 00
W. T. Garratt.....	30	18	.....	.....	.....	.....	204 00
H. P. Wakelee.....	30	11	.....	.....	.....	.....	183 00
H. J. Booth & Co....	36	12	.....	.....	.....	.....	216 00
A. L. Bancroft & Co.	30	5	.....	.....	.....	.....	165 00
Charles S. Eaton.....	23	8	.....	.....	.....	.....	139 00
Payot, Upham & Co.	22	8	.....	.....	.....	.....	134 00
W. J. Stoddard.....	28	1	.....	.....	.....	.....	143 00
J. B. Golly & Co.....	21	7	.....	.....	.....	.....	126 00
Daniel E. Hayes.....	20	.....	.....	.....	.....	.....	100 00
David Kerr..... ...	18	4	.....	.....	.....	.....	102 00
Hopps & Sons.....	16	7	.....	.....	.....	.....	101 00
A. R. Eddy.....	15	6	.....	Currency.	.....	.....	93 00
A. Roman & Co.....	16	5	.....	.....	.....	.....	95 00
Kohler, Chase & Co.	14	5	.....	.....	.....	.....	85 00
Charles Elliott.....	11	.....	.....	.....	.....	.....	55 00
Nelson & Doble.....	9	1	.....	.....	.....	.....	48 00
C. F. Bassett.....	8	3	.....	.....	.....	.....	49 00
Hanscom & Co.....	7	.....	.....	.....	.....	.....	35 00
Painter & Calvert...	6	4	.....	.....	.....	.....	42 00
Orr & Atkins.....	6	1	.....	.....	.....	.....	33 00
J. Spiers.....	5	2	.....	.....	.....	.....	31 00
Richard Savage.....	2	6	.....	.....	.....	.....	28 00
R. B. Woodward.....	1	.....	.....	.....	.....	.....	5 00
P. B. Cornwall.....	1	.....	.....	.....	.....	.....	5 00
J. H. Gilmore.....	.....	* 157	.....	.....	.....	.....	235 50
J. H. Culver.....	.....	* 50	.....	.....	.....	.....	75 00
OTALS.....	6,547	1,760	570	77,208	11,271	481	$80,101 50

* For employees of exhibitors @ $1 50, each.

RECAPITULATION OF TICKET ACCOUNT.

Double Season Tickets	6,547	@	$5 00	$32,735 00
Single Season Tickets	1,553	@	3 00	4,659 00
Children's Season Tickets	570	@	1 50	855 00
Adult Single Tickets	77,208	@	5 04	38,604 00
Children's Single Tickets	11,271	@	2 50	2,817 75
Excursion Tickets	481	@	2 25	120 25
For Employees of Exhibitors	207	@	1 50	310 50
TOTAL				80,101 50

BUILDING EXPENSE ACCOUNT.

PLANS—D. Farquharson, Plans	$250 00	
S. H. Wheeler, Tracing Plans	35 00	
		285 00
CONTRACT—J. Drury, Contract for Construction		69,600 00
EXTRA WORK—J. Drury		1,096 67
MATERIAL AND LABOR—Preston & McKinnon, Lumber	2,997 42	
Mechanics' Institute, Doors, Frames, etc	67 13	
Brittan, Holbrook & Co., Tin Plate and laying same	804 23	
Thomas Day, Water Closet	432 00	
J. Q. Garfield, Whitening	91 00	
Lawton & Co., Braces for Chimney	4 50	
E. Boesch, two Brackets for front Lamps	30 00	
N. P. Perine, Roofing Kitchen	44 10	
R. Patrick, & Co., Hardware	150 48	
Cement, Drain and Water Pipe Co., Drain Pipe	3 25	
S. N. Grubb, Labor and Material for Sinks and Pipes	19 25	
F. W. Muller, Padlocks, Bolts, etc	4 00	
		4,647 36
WAGES—Wages, Carpenters and Laborers	1,500 00	1,500 00
SUPERINTENDENT—J. R. Wilcox, Superintendent of Building	250 00	
		250 00
Total		77,379 03

FITTING AND DECORATING BUILDING.

GAS FITTING—S. H. Wheeler, Plans	$ 29 00	
Thomas Day, Contract for Gas Fitting and extra Work	4,015 16	
Isaac P. Frink, Gas Reflectors	5,520 00	
S. N. Grubb, Gas Pipe and Fittings	420 13	
J. Upstone, Hanging Irons	10 00	
San Francisco Gas Light Co., Gas Pipe and setting Meters	800 00	
S. N. Grubb, Gas Pipe and Tips for Reflectors, and Labor	50 65	
		10,844 94
CARRIED FORWARD		$88,223 97

BROUGHT FORWARD		$88,223 97
WATER PIPES—Spring Valley Water Co.	$ 272 84	
Thomas Day	1,618 24	
		$1,891 08
MACHINERY—Moynihan & Aitkin, two Steam Boilers	3,040 00	
Hinckley & Co., Shafting, Pullies, Box Heater, Pipes, etc	1,731 56	
W. T. Garratt, Engine connections	918 51	
W. Cousins, Building brick work around Boilers	513 60	
Pacific Rolling Mill, Shafting	333 17	
T. D. Tobin, Brick	575 20	
Davis & Cowell, Lime and Fire Brick	171 00	
California Wine Cooperage Co., three Tanks	135 00	
M. C. Brydges, Iron Jacket, Pipes and Labor	158 75	
A. M. Jewell & Co., Pipe	63 64	
Preston & McKinnon, Lumber	122 25	
H. N. Cook, Belting	49 58	
S. H. Wheeler, Plans	26 00	
Kittle & Co., Cement	14 00	
F. W. Muller, Iron, Screws and Labor	10 00	
H. T. Holmes & Co., Fire Brick	8 00	
W. Blair, Painting Engines	30 00	
Brittan, Holbrook & Co., Flue	26 30	
Hinckley & Co., Hoe, Rake, Scraper, etc	18 75	
D. Stoddart, Injector	39 55	
Whittier, Fuller & Co., White Lead	1 25	
Hawkins & Cantrell, Labor on Engine	63 70	
Wages of Carpenters and Laborers	500 00	
Moynihan & Aitken, Repairs to Boilers	23 35	
		8,573 16
FURNITURE—H. M. Newhall & Co., 136 Cases of Chairs	804 00	
C. Schreiber & Co., Setting up Chairs	78 00	
Locke & Montague, Range for Restaurant	200 00	
California Mills, Show Cases	175 75	
Whittier, Fuller & Co., Glass for Show Cases	151 62	
R. Patrick & Co., Hardware	137 40	
Preston & McKinnon, Lumber	170 65	
Mechanics' Institute, Carpet, Lanterns, Wash Basins, Tables and Matting	140 25	
Electrical Construction and Maintenance Co., Use of Electrical Gongs and Clock System	200 00	
R. L. Harper, Repairing 500 Chairs and 32 Settees	141 00	
Plum, Bell & Co., Carpet, Shades and Enameled Cloth	130 26	
Armes & Dallam, Dusters, Pails, Brooms and Rollers	85 15	
Brittan, Holbrook & Co., Hardware	10 50	
J. E. Mitchell & Co., Cleaning and laying Carpet	12 70	
Phipps & Flenniken, Crash	12 00	
Sanderson & Bro., Pitchers, Goblets, Dishes and Spittoons	9 75	
R. Sawyer, Trucks	15 00	
C. Lawton, & Co., Glasses and Cork Screw	8 00	
E. K. Howes & Co., Brooms	6 50	
Joost Bros. & Co., Hatchets and Hammers	2 60	
A. Davis, Glass for Show Cases	5 00	
R. F. Osborn & Co., Lanterns and Castors	8 25	
J. M. Miller, use of Cases	66 50	
CARRIED FORWARD	$2,570 88	$98,688 21

BROUGHT FORWARD	$ 2,570 88	$98,688 21
FURNITURE—(CONTINUED.)		
J. Morton & Co., Drayage, Chairs, etc	11 00	
J. H. Blumenberg, Screen and Kitchen Sink	15 00	
Goodwin & Co., five Stools	7 50	
S. & G. Gump, Glass	28 25	
California Furniture Manufacturing Company, Chairs, etc	44 25	
J. Hoey, one Bureau	8 00	
J. Drury, Lumber, etc	120 00	
Goodwin & Co., use of three pieces Carpet	7 50	
McCottry & Durnin, bill for Janitor's door	15 00	
Wages of Carpenters	1,500 00	
E. Boesch, four Hexagon lamps and two Brackets	95 00	
		4,422 38
DECORATIONS—P. Mezzara, loan of Statuary	400 00	
A. Crawford & Co., two Flags	125 00	
Costner & Co., three Flag Poles	90 00	
R. P. Davis, hoisting Flag Staffs	66 00	
C. C. Quince, Gilding Balls for Flag Poles	3 75	
A. Crawford & Co., repairs to Flags	22 50	
Hopps & Sons, Painting Art Gallery Statuary, Stands, etc.	520 05	
Preston & McKinnon, Lumber	231 79	
S. &. G. Gump, hanging Paintings	188 50	
A. S. Iredale, Labor about Fountains and Materials used	323 45	
A. Barbier, Decorating and removing decorations	104 50	
L. & M. Sachs & Co., Cambric	98 03	
L. R. Myers & Co., Use of Marble Fountain	25 00	
J. H. Gilmore, paid for sewing cloth	31 80	
Coffin & Hendry, one coil Manila, Cleets, Staples and Rings	4 45	
J. K. Prior, three Sprinklers for Fountain Jets	25 00	
W. Brideson, Carting Pictures	35 00	
J. Joseph, Carting Pictures	41 75	
M. Massett, Carting Pictures	16 00	
Musto Bros., Repairs to Lion	75 00	
S. N. Grubb, Removing Fountains and Pipes	10 00	
		2,437 57
HORTICULTURAL GARDEN—F. A. Miller, Construction of Garden and Services		782 45
RUNNING EXPENSES.		
GAS—San Francisco Gas Light Company, 1,581,000 Feet Gas @ $3 50		5,533 50
WATER—Spring Valley Water Company		600 00
PRINTING—C. W. Gordon, 50,000 Blanks and Cards	220 35	
Spaulding & Barto, Checks, Tickets and Blanks.	187 00	
Britton, Rey & Co., Entrance Cards and Envelopes	221 60	
Francis & Valentine, Tickets, etc	91 50	
Kane & Cook, Printing Applications, Cards, etc.	26 00	
C. A. Murdock & Co., Circulars, Standing Rules, etc	26 50	
B. F. Sterrett, Posters and Cards	27 50	
Frost & Richards, Signs	14 00	
Women's Coöperative Printing Co., Cards and Notices	14 00	
CARRIED FORWARD	828 45	$112,464 11

BROUGHT FORWARD	$ 828 45	$112,464 11
PRINTING—(CONTINUED.)		
W. P. Harrison, Circulars and Printing on Envelopes	7 50	
Dewey & Co., 92 Cards and numbers for Art Gallery	15 50	
E. Bosqui & Co., 100 Cards	10 50	
Hopps & Son, "Exit" Sign	5 25	
S. H. Sheplar & Co., Rubber Stamps for marking Admission Tickets	27 00	
D. P. Small, three Boxes for Type	10 00	
Cosmopolitan Printing Co., 2,000 Circulars	26 74	
F. Eastman, 2,000 Cards and 1,000 Circulars	26 00	
I. Morris, one large Card	3 00	
B. Dore & Co., 150 Cards and 300 Notices	5 00	
F. Saregni, Plan of Ticket	10 00	
Francis & Valentine, 300 Posters	9 00	
D. Hicks & Co., 3,000 Checks	8 00	
		991 94
STATIONERY—J. G. Hodge & Co., Envelopes	60 00	
A. L. Bancroft & Company, Envelopes, Paper, Books, etc	49 12	
J. G. Hodge & Co., Ledger, Cash Book and Journal	11 25	
D. Hicks & Co., Books	40 75	
Eaton & Edwards, sundry articles of Stationery	38 80	
J. H. Culver, sundry articles of Stationery	2 50	
Mechanics' Institute, sundry articles Stationery	28 00	
Payot, Upham & Co., Envelopes	13 75	
		244 17
ADVERTISING—Alta	125 75	
Bulletin	101 25	
Call	128 75	
Chronicle	138 75	
Courrier de San Francisco	10 00	
Chicago Tribune	58 88	
Demokrat	18 00	
Dewey & Co	125 00	
Examiner	76 25	
Figaro	36 00	
T. Boyce	80 00	
China News	4 00	
Keyt & Co	74 70	
St. Louis Democrat	48 00	
Munn & Co	84 86	
Carlos White	45 00	
Post	100 35	
Spirit of the Times	15 00	
Hebrew Observer	12 00	
16 other papers. $5 each	80 00	
2 other papers, $6 each	12 00	
4 other papers, $7 each	28 00	
4 other papers, $8 each	32 00	
		1,434 54
SALARIES—Clerks, Canvassers and Agents		3,721 13
WAGES—Police, Watchmen, Messengers, Engineers and Laborers		6,063 76
MUSIC—G. T. Evans,		4,330 00
CARRIED FORWARD		$129,249 65

Brought forward		$129,249 65
Fuel—Black Diamond Coal Mining Co., Black Diamond Coal	$ 103 50	
Thomas Anderson, Sydney Coal	390 16	
		493 66
Expense Account—S. H. Wheeler, Diagram of Building for Location Committee	28 00	
J. H. Gilmore, 1500 Stamps for Circulars	272 50	
F. G. Hartman, Posting up Bills	2 75	
C. Gerdes, Cartage, eleven Loads	14 50	
R. Wickelhausen, Use two Furnaces	2 50	
H. Ebright, Petty Cash	9 80	
J. H. Culver, Petty Cash	102 41	
Mechanics' Institute, Stamps, and Petty Expenses	130 07	
J. H. Gilmore, Petty Cash	89 20	
G. Churchward, Use of Horse and Buggy	45 00	
E. Neumann, 1 Box Soap, 2 Brushes and Combs	6 50	
E Denny & Co., one Square and Triangle	3 75	
W. K. Vanderslice & Co., Badges	44 00	
Bradley & Rulofson, Two Dozen Photographs	14 00	
W. Fleischer, Navy Caps	28 12	
I. Shirpser, Furs	100 00	
H. L. Davis, Petty Cash	234 65	
Mrs. Chick, Folding, enveloping, directing and stamping 15,000 Circulars @ $5 75 per M	86 25	
Oil waste, packing, etc., for Engines	78 39	
Expense of Horticultural Display	609 00	
Expense of Display of Fruit	150 00	
		2,051 39

CONTINGENT EXPENSES.

Discount—On Silver and Currency		336 80
Interest—M. Reese, Interest on $20,000 note, one month		166 66
Insurance—Potter, Jacobs & Easton, Insurance on $43,000 in twenty-two Companies	1,381 25	
State Investment Insurance Co. Insurance on $3,000	97 50	
Home Mutual Insurance Co., Insurance on $6,000 $180, and $2,500 on Flags $31 25	211 25	
		1,690 00
		$133,988 16

RECAPITULATION.

RECEIPTS (other than loans).

Sale of tickets	$80,101 50	
Privileges	4,507 76	
Donations	75 00	
Total		$84,684 26
Deficiency		49,303 90
		$133,988 16

DISBURSEMENTS.

BUILDING			$77,379 03
FITTING AND DECORATING—Gas-fitting	$10,844 94		
Water pipes	1,891 08		
Machinery	8,573 16		
Furniture	4,422 38		
Decorations	2,437 57		
Horticultural Garden	782 45		
		28,951 58	
RUNNING EXPENSES—Gas	$5,533 50		
Water	600 00		
Printing	991 94		
Stationery	244 17		
Advertising	1,434 54		
Salaries and wages	9,784 89		
Music	4,330 00		
Fuel	493 66		
Expense Account	2,051 39		
		25,464 09	
CONTINGENT EXPENSES—Discount	$336 80		
Interest	166 66		
Insurance	1,690 00		
		2,193 46	
			$133,988 16

LOANS.

CASH, WITHOUT INTEREST.

W. C. Ralston	$5,000
Spring Valley Water Co	2,000
S. F. Gas Light Co	2,000
D. O. Mills	2,000
Union Insurance Co	1,000
Home Mutual Insurance Co	1,000
Donohoe, Kelly & Co	1,000
Parrott & Co	1,000
M. S. Latham	1,000
Commercial Insurance Co	1,000
G. C. Johnson & Co	1,000
Fireman's Fund Insurance Co	1,000
H. B. Tichenor & Co	1,000
T. H. Selby & Co	1,000
G. B. Knowles	1,000
R. B. Woodward	1,000
W. Sharon	1,000
T. Bell	1,000
State Investment Ins. Co	1,000
A. A. Cohen	1,000
Hanscom & Co	500
Baker & Hamilton	500
Locke & Montague	500
R. Watt	500
Brittan, Holbrook & Co	500
Conroy, O'Connor & Co	500
Kittle & Co	500
W. T. Coleman & Co	500
Albert Dibblee	500
Tubbs & Co	500
Hinckley & Co	500
Huntington, Hopkins & Co	500
H. J. Booth & Co	500
Glasgow Iron Co	500
Hanson, Ackerson & Co	500
Merchants' Exchange Bank	500
California Furniture Co	500
R. Patrick & Co	500
Redington, Hostetter & Co	500
Pacific Saw Co	500
Pillsbury, Webb & Co	500
Nelson & Doble	500
Crane & Brigham	500
L. Rosener	500
Amount Forward	$39,000

CASH, WITHOUT INTEREST.

Amount Bro't Forward	$39,000
Real Estate Associates	500
Linforth, Kellogg & Co	500
Pacific Cordage Co	500
H. H. Pearson	500
W. T. Garratt	500
M. C. Hawley & Co	500
W. Norris	500
Allyne & White	300
Schultz & Von Bargen	300
Sullivan, Kelly & Co	300
Hickox & Spear	300
A. B. Forbes	300
S. L. Jones	300
Farwell & Co	300
Wellman, Peck & Co	250
S. H. Seymour & Co	250
A. Austin	250
J. Taylor & Co	250
Sather & Co	250
C. Waterhouse	200
S. S. Smith	100
H. Rosekrans	100
	$46,250

CASH, WITH INTEREST.

M. Reese	20,000
Total Cash Loans	$66,250 00

MATERIAL.

Preston & McKinnon	$3,522 11	
B. & J. S. Doe	1,944 00	
Whittier, Fuller & Co	481 50	
Pac. Rolling Mill	333 17	
		6,280 78
Total Loans		$72,530 78
Loan paid M. Reese		20,000 00
Loans unpaid		$52,530 78
Cash on hand		429 41
Net deficiency		$52,101 37

CARNIVAL BALL.

RECEIPTS.

Sale of Tickets		$9,790 50	
Privileges—Supper	$450		
Masks	15		
Opera Glass	15		
Candy	10		
		490 00	
From Hat-room		92 25	
			$10,372 75
Deficiency			2,797 47
			$13,170 22

DISBURSEMENTS.

Material and Labor—J. R. Wilcox, seats and platforms		$6,600 00	
J. R. Wilcox, extra work		293 00	
Neville & Co., Duck cover for floor		567 20	
Page and Cowell, Lumber		103 82	
Hanson & Ackerson, Lumber		138 92	
Mills & Brewster, Glass for show-case		40 00	
Hopps & Son, Cloth sign		3 60	
J. W. Davidson & Co., Ribbon		8 00	
J. W. Cherry, Painting banner		8 00	
S. N. Grubb, Putting up reflector, and labor		8 00	
S. Haussman & Co., Use of fifteen mirrors		25 00	
California Furniture Mfg. Co., twelve wash stands		18 00	
Goodwin & Co., Use of fifteen dozen chairs and damage to the same		20 00	
J. C. Bell, Laying canvas		75 00	
			7,908 54
Music—N. Ballenberg			328 00
Performers, Buislay Family and Arab Troupe			150 00
Advertising			416 90
Jewelry, etc—Anderson & Randolph		$637 50	
W. K. Vanderslice & Co		175 00	
			812 50
Gas—S F. Gas Light Co., 73,000 ft. gas, at $3.50			255 50
Decorating—A. Barbier, $140.60; Evergreens, flowers, etc., $109.75; Repairs to flags, $22.90			273 25
Costumes—Mrs. S. F. Paullin		$205 00	
F. O. Osten		53 00	
T. Gossman		181 00	
W. Ward		19 75	
			458 75
Testimonial—W. H. Hilton			150 00
Printing, Etc.—Britton & Rey, Invitation Cards and Envelopes		150 00	
W. P. Harrison, Programmes, Cards, etc		349 12	
C. A. Murdock & Co., Circulars, Envelopes, Cards and letter headings		91 50	
G. T. Brown & Co., 4,000 Tickets		65 00	
Spaulding & Barto, Tickets, Checks, Notices Cards, etc		66 00	
G. M. Wood & Co., Stencil figures and brush		10 00	731 62
Carried forward			$10,753 44

BROUGHT FORWARD		$731 62	$10,753 44
PRINTING—(CONTINUED.)			
Francis & Valentine, Cards and placards	19 00		
W. Kierski, Distributing bills, 1,000 excursion dodgers	6 50		
A. Buswell, Hat Checks	6 75		
Eaton & Edwards, Books and Envelopes	8 50		
			772 37
PAY ROLL—J. H. Culver	421 12		
H. J. Ladd, Ticket Clerk	125 00		
Clerks and Doorkeepers	53 00		
F. Whymper, Services on press	40 00		
J. S. Wilkins. Services six ladies and one man	29 00		
Mrs. Hayward, Services in Ladies' room	35 00		
			703 12
DRAWING—S. H. Wheeler	$85 00		
J. F. Lewis, Plan showing seats	50 00		
			135 00
REFRESHMENTS—J. Churchward			39 00
SUNDRIES—Hickox, McKinney & Co., Sundry bills paid		$629 04	
W. H. Hilton, Petty cash	19 20		
Mechanics' Institute, Petty cash	36 30		
J. H. Culver, Petty cash	7 75		
George Thiele, Supper tickets	71 00		
H. L. Davis, Petty cash	4 00		
			767 29
			$13,170 22

ORGANIZATION OF BOARD OF MANAGERS.

The Board of Managers of the Ninth Industrial Exhibition was organized on the 16th October, 1873, the Board of Trustees of the Mechanics Institute constituting the new Board, with the following officers:

	A. S. HALLIDIE,	President.
(1)	J. C. PATRICK,	Vice President.
	H. L. DAVIS,	Treasurer.
(2)	S. H. WHEELER,	Recording Secretary.
(3)	H. W. JONES,	Corresponding Secretary.

At the meeting of the 16th of October, a Committee, consisting of Messrs. Hallidie, Davis and Patrick, was appointed to consider a proposition from Mr. Andrew McCreary to lease his lot on Eighth street, between Market and Mission, for the purposes of the projected Exhibition. The Committee reported on the 21st of October, that Mr. McCreary would lease the ground for five years, with the privilege of the sixth year, for the payment of the taxes

(1) Afterwards replaced by Mr. P. B. Cornwall.
(2) Afterwards replaced by Mr. J. H. Culver.
(3) Afterwards replaced by Mr. James Spiers.

by the Board of Managers, and a ground rent for the sixth year, of seven thousand five hundred dollars. The Board accepted and executed the lease on the 4th of November.

At a meeting, held on the 26th January, 1874, it was resolved to raise a sum, not to exceed seventy-five thousand dollars, by loans without interest, for the purpose of building and fitting up a Pavilion. Subscription books were prepared, and loans made for the purpose named.

Rules and Regulations for the government of the Board were reported by Messrs. Wells, Spaulding and Patrick, and adopted on February 3d, 1874, as follows:

RULES AND REGULATIONS.

The Board of Managers shall consist of fourteen members, not less than three-fourths of whom shall be members of the Board of Trustees of the Mechanics' Institute. Seven members shall constitute a quorum for the transaction of business.

The officers of the Board shall consist of a President, Vice President, Recording Secretary, Corresponding Secretary and a Treasurer, of which the President, Vice President and Treasurer shall be chosen from the Board. The Recording Secretary and Corresponding Secretary may or may not be chosen from the Board.

The duties of the above named Officers shall be such as are common to such positions, together with such other business as may be presented to them from time to time by the Board. The Recording Secretary may also act as Corresponding Secretary under the direction of the Board.

There shall be ten standing committees, namely: Auditing, Building, Circulars and Classification, Printing and Advertising, Machinery and Power, Rules, Regulations and Tickets, Music and Decorations, Privileges, Location, and Police.

Special committees, not herein provided for or mentioned, shall be appointed by the President, whenever required by the Board of Managers.

No Committee shall incur pecuniary responsibility without having received special authority from the Board of Managers, at a regular or called meeting; nor shall any bills be paid until they have been certified to by the Sub-Committee incurring the indebtedness, passed upon by the Auditing Committee, and ordered to be paid by the Board of Managers at any regular or called meeting of the same.

All contracts shall be let to the lowest responsible bidder.

All contracts in writing shall be signed by the President and Recording Secretary on the part of the Board of Managers, the same having been approved by that body.

The regular meetings of the Board of Managers shall be held on the second and fourth Tuesdays of each month.

The Treasurer shall deposit daily, in some secure place of keeping, to the credit of the Ninth Industrial Exhibition, all funds arising from the Exhibition.

All payments from the Exhibition funds shall be made on the order of the Board of Managers, the warrants for payment being signed by the President and Recording Secretary.

All employees shall be appointed by the Board of Managers, and their compensation determined by that body.

No member of the Board shall be pecuniarily interested in any contract arising from the Fair, nor shall he receive any pecuniary compensation, directly or indirectly, for any services rendered in connection therewith.

The foregoing Rules and Regulations shall be altered only at a regular meeting of the Board of Managers, and by at least a two-third vote of the members present, notice having been given on a regular meeting previous.

A Special Committee was appointed to consider the matter of Premiums to be awarded exhibitors, and their report, recommending that no Premiums be

awarded, was adopted on the 17th of February.

The standing committees were appointed, and their duties assigned, as follows:

AUDITING.

W. P. Stout,.....P. B. Cornwall,.....Geo. Spaulding.

The Auditing Committee shall consist of three members, whose duty shall be to examine bills and audit such as they may approve. It shall cause a true and correct set of books to be kept of the transactions of the Committee, and shall exercise a rigid supervision over all matters relating thereto.

BUILDING.

Asa R. Wells,.....John P. Curtis,.....J. H. Macdonald.

The Building Committee shall consist of three members, whose duty it shall be to exercise a general supervision over the Exhibition Building, and to have control of all mechanics and laborers employed thereon.

CIRCULAR AND CLASSIFICATION.

J. H. Macdonald,.....J. P. Curtis,.....Richard Savage.

The Circular and Classification Committee shall consist of three members. It shall issue addresses to the public, setting forth the design of the Industrial Exhibition. It shall issue circulars to the Manufacturers, Inventors and Producers of this and the adjoining States and Territories, and of such other parts of the world as they may deem desirable, inviting their co-operation, and setting forth the advantage of such exhibitions. It shall take charge of and answer all communications other than those belonging to the Corresponding Secretary. It shall classify and arrange into suitable departments such articles as may be presented for exhibition.

PRINTING AND ADVERTISING.

Geo. Spaulding,.....Richard Savage,.....W. P. Stout.

The Printing and Advertising Committee shall consist of three members, who shall cause to be printed all necessary matter, and shall have charge of all advertising relating to the Fair.

POWER AND MACHINERY.

Chas. Elliot,.....James Spiers,.....Richard Savage.

The Committee on Machinery and Power shall consist of three members, whose duties shall be to procure and arrange the necessary driving machinery, shafting, etc., and to exercise a general supervision over the steam, fire and water departments of the Exhibition.

RULES, REGULATIONS AND TICKETS.

Jas. C. Patrick,.....P. B. Cornwall,.....Asa R. Wells.

The Committee on Rules, Regulations and Tickets shall consist of three members, whose duties shall be to prepare a set of Rules to govern visitors, exhibitors, employees, and the Committee on Awards. It shall also prepare Tickets of admission to the Exhibition.

MUSIC AND DECORATIONS.

H. L. Davis,.....R. B. Woodward,.....Chas. Elliot.

The Committee on Music and Decorations shall consist of three members, who shall have charge of all music and exercises during the Exhibition, and of decorating the building.

PRIVILEGES.

R. B. Woodward,.....P. B. Cornwall,.....Geo. Spaulding.

The Committee on Privileges shall consist of three members, who shall have charge of disposing of all privileges, subject to the approval of the Board.

LOCATION.

JAS. SPIERS, ... W. P. STOUT, ... GEO. SPAULDING.

The Committee on Location shall consist of three members, who shall locate all articles on exhibition during the Fair, except the Machinery, which shall be under the control of the Committee on Machinery and Power.

POLICE.

P. B. CORNWALL ..... H. L. DAVIS, ... RICHARD SAVAGE.

The Committee on Police shall consist of three members, who shall have the direction of all Police Regulations during the Fair.

It was resolved to advertise for plans and specifications for the construction of an Exhibition Building, and to offer a premium of three hundred dollars for the best accepted plan, and another of two hundred dollars for the second best accepted plan. None of the plans submitted, in accordance with this advertisement, meeting the approval of the Board of Managers, a contract was made with Mr. David Farquharson for plans and specifications to be furnished for the proposed building.

The following Circular was distributed through the Pacific Coast and the Eastern States :

NINTH INDUSTRIAL EXHIBITION,

TO BE HELD UNDER THE AUSPICES OF THE

MECHANICS' INSTITUTE,

SAN FRANCISCO, CALIFORNIA, 1874.

The Board of Managers of the Ninth Industrial Exhibition herewith announce that a grand Industrial Fair will be held under the auspices of the Mechanics' Institute, in the City of San Francisco, State of California, opening on Tuesday, the 18th of August, 1874, at 11 A. M., and continuing for thirty days thereafter. All those interested in the material Industries, the Arts and Sciences, are invited to prepare such productions, natural or otherwise, as may be desirable to exhibit at said Fair.

The Board of Managers, in view of the increasing importance of San Francisco as a commercial and manufacturing center, and having experienced in the consecutive Fairs held by them, the expanding requirements of both exhibitors and visitors, have determined to construct an Exhibition building having an area of 150,000 superficial feet of floor room, with a degree of convenience and magnificence not heretofore attempted on the Pacific Coast.

The location of the Exhibition building is exceedingly central, and convenient to six different lines of street cars, connecting with every part of the city. It is immediately opposite the new City Hall, is but 2½ blocks distant from the United States Branch Mint, and distant 1500 yards from the Grand Hotel.

The building, running the whole length of the east side of Eighth street, between Mission and Market streets, is bounded by three of the widest streets in the city, and can be approached on the east side by two 50-feet streets.

The Managers need scarcely give assurances of care and attention to the requirements of the exhibitors. The previous Industrial Exhibitions held under the same auspices, it is believed, is a guaranty that all will be done in this respect that is possible.

The Exhibition will be open to all the world, and all exhibitors will be placed on the same footing.

Motive power will be furnished free of charge.

The building will be amply lighted, both by day and by night.

In the afternoons and evenings, the best bands will discourse pleasant music, and all requirements of refinement and comfort (including that of the inner man) will be provided.

Persons desiring to exhibit will present their applications for space *at as early a day as possible*, addressing their applications or inquiries to the "Secretary" of the Board of Managers, Mechanics' Institute, No. 27 Post street, San Francisco, California.

In order to secure space, applications must be in before the 20th day of July, 1874. The Managers desire it to be understood that they cannot guarantee space if not applied for before the above date.

Blanks for space can be obtained at the Mechanics' Institute on application by letter or otherwise; and any information will be given by applying to any member of the Board of Managers, as below:

A. S. Hallidie, ... 113 Pine Street.
James C. Patrick ..... 122 Battery Street.
Henry L. Davis ..... 421 California Street.
H. W. Jones, ... 612 Clay Street.
*Asa R. Wells ..... Mechanics' Mill.
P. B. Cornwall ..... Spear Street, corner Harrison.
Charles Elliot ..... 516 California Street.
George Spaulding ..... 414 Clay Street.
Richard Savage ..... 139 Fremont Street.
A. S. Iredale ..... 957 Mission Street.
*J. H. Macdonald ..... 217 Spear Street.
*J. P. Curtis ..... 320 Jackson Street.
R. B. Woodward ..... Woodward's Gardens.
J. H. Culver ..... Corner Mission and Fremont Streets.

Or by the Librarian or Assistants, at the Librarian's desk of the Mechanics' Institute, 27 Post street, San Francisco.

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* Building Committee.

The following Rules and Regulations were also made public:

RULES AND REGULATIONS

OF THE

Ninth Industrial Exhibition, Mechanics' Institute,

SAN FRANCISCO, 1874.

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1. The Pavilion will be open for the reception of goods on Monday, August 10th. The Exhibition will be open to the public on Tuesday, August 18th, at 11 o'clock, A. M.

2. Applications for space must be made on or before July 20th, stating character of exhibit, amount and kind of space required—wall, table or floor. Blanks will be furnished for this purpose, and a clerk will be in attendance

at the Library of the Mechanics' Institute, every day from 12 to 1, and 7 to 10 P. M.

3. All persons presenting articles for exhibition must have them registered by the Receiving Clerk, who will give a receipt for the same, which receipt must be presented when the articles are withdrawn, at the close of the Exhibition.

4. The name of every article must be attached by the exhibitor to it, and filed with the Board of Managers.

5. In case of any misunderstanding, application may be made to the Manager of the day, who will at all times be in attendance.

6. Articles intended for sale will be labeled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Managers.

7. Steam power will be provided, so that machinery of all kinds may be seen in actual operation, and every facility possible will be given to exhibit working machinery to the best advantage.

8. Perishable articles will be received, or may be removed at any time during the Exhibition, with the consent of the Managers.

9. The most effectual means will be taken, through the agency of the Police and otherwise, to guard and protect the property on exhibition; and it will be the purpose of the Managers that all articles shall be returned to the owners without loss or injury. Still, all articles deposited will be at the risk of the owners.

10. Articles intended for exhibition must be entered and placed on exhibition on or before Friday, August 21st.

11. The Managers are desirous that articles should be presented early. Those from abroad, intended for exhibition, should be properly packed, and if not consigned to exhibitor's agent, must be marked: "Managers of Ninth Industrial Exhibition, San Francisco, Cal." Articles from foreign countries should be accompanied with a certificate by the American Consul, in order that, upon their arrival, the proper course may be taken to have the duties remitted. All articles thus received, arriving too early, will be stored free of cost to the exhibitor, and the Managers will have them duly placed in proper position for exhibition. No freight charges will be paid by the Managers; but exhibitors are notified that arrangements are being made with various transportation companies to repay freight charges on evidence of return of goods exhibited.

Information will be furnished on addressing "Managers of Ninth Industrial Exhibition, San Francisco, Cal."

Mr. J. H. Gilmore was appointed Special Agent, and Superintendent of the Exhibition.

Bids were invited for the construction of the Pavilion, and the contract was awarded to Mr. James Drury, for the sum of sixty-nine thousand and six hundred dollars.

The Pavilion, as constructed in accordance with the plans, has a frontage on Mission street of 201 feet, and the same on Market street; the Mission street front having a verandah 100 feet wide. The length of the building is 541 feet on Eighth street. The interior arrangement shows a central nave 100 feet wide and 440 feet in length, surrounded on all sides by a two-story building 50 feet wide. The ticket office, which contains a fire-proof vault, is immediately under the verandah on Mission street. Above the ticket office is the managers' room. On the second floor is a gallery 16 feet wide, running completely around the building. Outside of this, on Eighth street, is the Art Gallery, 50 feet wide by 400 feet in length. The height of the building, from the floor to the top of the main rafter, is 85 feet 7 inches, diminishing to 56 feet 5 inches at the sides. The roof is supported by a series of arches running the entire length of the building, and having a clear span of 100 feet. The materials of which the structure is composed are as follows: 1,703,000 feet of lumber, exclusive of shingles, which were 1,398,000 in number; 190,000 bricks for foundation; 4,000 pounds of iron bolts; 306 kegs of spikes

and nails. The building contains 6,287,000 cubic feet, covering 4½ acres of ground. There are 3,000 gas jets for lighting, and ventilation is secured by over 500 openings. There are eight doors, all opening outwards, for exit.

Arrangements were entered into with the San Francisco Art Association and the Bay District Horticultural Society, by which the former took entire charge of the Art Gallery, and the latter the direction of the Horticultural Department of the Exhibition.

After mature deliberation and a careful weighing of the whole matter, it was decided by the Board of Managers that no premiums should be offered to exhibitors; it being held that the public was the best judge as to the merits of the articles displayed before it, and the articles themselves the best arguments in their own favor. It was thought advisable to test this plausible theory by practice; and the result has satisfied the Managers that, whatever may be the experience of other communities, the theory fails to hold good with this. It has been found that most exhibitors prefer the system of competition and awards.

Prizes were offered by the Trustees of the Mechanics' Institute to apprentices and the pupils of the Public Schools for Mechanical and Architectural Drawings.

The attendance at the Exhibition was larger than had been anticipated. It was thought that the ground was too far removed from the settled portions of the city to be generally and easily accessible; but it proved to be within easy reach of all. After the opening, no one was heard to speak of the distance to be traveled over. The street-cars were continually filled on all the routes leading to, or passing in the neighborhood of the Pavilion.

The number of exhibitors, as compared with those at the Fairs of previous years, was as follows:

Years.....	1857.	1858.	1864.	1865.	1868.	1869.	1871.	1874.
Exhibitors..	650.	575.	717.	585.	748.	826.	1,020.	810.

The building was opened to the public on August 18th, and remained open to Saturday, October 3d, being 46 days in all. The total receipts from the sale of Season and Single Tickets were $80,101.50

By an ingenious system of marks, the invention of Mr. A. R. Wells, the Season Tickets were made to show the identity of the owner.

A count of visitors, made on four Saturdays during the Exhibition, gave the following results:

August 29th	23,178
September 5th	23,026
September 12th	22,266
October 3d	29,272

The alterations rendered necessary by the Carnival Ball after the close of the Exhibition, were entrusted to Mr. J. R. Wilcox, the lowest bidder, at a cost of six thousand six hundred ($6,600) dollars. These alterations embraced the closing in of the main floor, 294 feet long by 68 feet wide, by a partition seven feet high. Three rows of seats, beginning at the partition, rose to the galleries on each side, while at the ends the seats were carried far up above, and almost to the roof. The whole number of seats, including two rows of chairs in each gallery, was 4,192. The floor was covered with 2,978 yards of canvas.

The preliminary details, and the management of the Ball, were successfully carried out by Messrs. A. A. Hickox and W. H. Hilton, who most kindly volunteered their services for the occasion.

LOANS.

From	Union Insurance Company	$1,000 00
	Home Mutual Insurance Company	1,000 00
	Donohoe, Kelly & Co	1,000 00
	Parrott & Co	1,000 00

M. S. Latham	1,000 00
Spring Valley Water Company	2,000 00
W. C. Ralston	5,000 00
Commercial Insurance Company	1,000 00
Baker & Hamilton	500 00
Locke & Montague	500 00
G. C. Johnson	1,000 00
R. Watt	500 00
Brittan & Holbrook	500 00
Conroy & O'Connor	500 00
Kittle & Co	500 00
W. T. Coleman	500 00
Albert Dibblee	500 00
Tubbs & Co	500 00
Fireman's Fund Insurance Company	1,000 00
Hinckley & Co	500 00
Huntington, Hopkins & Co	500 00
H. B. Tichenor & Co	1,000 00
H. J. Booth & Co	500 00
Glasgow Iron Works	500 00
Hanson, Ackerson & Co	500 00
Merchants' Exchange Bank	500 00
California Furniture Company	500 00
R. Patrick & Co	500 00
Redington, Hostetter & Co	500 00
Allyne & White	300 00
Shultz & Von Bargen	300 00
Wellman, Peck & Co	250 00
S. S. Smith	100 00
Pacific Saw Company	500 00
Sullivan, Kelly & Co	300 00
H. Rosekrans	100 00
Hickox & Spear	300 00
A. B. Forbes	300 00
S. L. Jones	300 00
S. H. Seymour & Co	250 00
San Francisco Gas Light Company	2,000 00
T. H. Selby & Co	1,000 00
G. B. Knowles	1,000 00
C. Waterhouse	200 00
R. B. Woodward	1,000 00
Pillsbury, Webb & Co	500 00
Nelson & Doble	500 00
Crane & Brigham	500 00
Levi Rosener	500 00
D. O. Mills	2,000 00
William Sharon	1,000 00
Thomas Bell	1,000 00
State Investment Insurance Company	1,000 00
Real Estate Associates	500 00
Linforth, Kellogg & Co	500 00
Farwell & Co	300 00
Alexander Austin	250 00
Pacific Cordage Company	500 00
A. A. Cohen	1,000 00
H. H. Pearson	500 00
J. Taylor & Co	250 00
W. T. Garratt	500 00
M. C. Hawley & Co	500 00
W. Norris	500 00

Sather & Co	250 00
Hanscom & Co	500 00
B. & J. S. Doe (Building Material)	1,944 00
Whittier, Fuller & Co (Glass)	481 50
Preston & McKinnon (Lumber)	3,522 11
Pacific Rolling Mill (Iron)	333 17
Total	$52,530 78

OPENING EXERCISES.

The success of the opening surpassed the anticipations of the management and the public. Over five thousand ladies and gentlemen, representing in an eminent degree the culture and public spirit of the community, occupied the galleries and the spacious platform in the center of the Pavilion while the literary and musical exercises were in progress, and manifested the liveliest interest in the proceedings. The exercises passed off smoothly, considering the chaos incidental to the arrangement of the various booths, and the applause bestowed upon the speakers and the vocalists was hearty and spontaneous. The orchestra, under the leadership of Professor George T. Evans, opened the exercises with the March from *Tannhauser*, which was rendered in fine time and with excellent effect. Rev. W. A. Scott followed with an appropriate invocation of Divine blessing upon an enterprise fraught with such good for the people, the choir and orchestra introducing at the close of the prayer, the chorus "Thanks be to God," from *Elijah*. As the applause died away, President Hallidie arose and bid the people a cordial welcome in the name of the Mechanics' Institute.

INTRODUCTORY REMARKS BY PRESIDENT HALLIDIE.

To-day we are assembled to inaugurate the ninth industrial exhibition held under the auspices of the Mechanics' Institute—an exhibition which will tell its tale of progress and demonstrate the condition of art, industry, and science on this western outpost of our common country. We must feel grateful for what we find good, rejoice in what we see is better, and resolve, in the future, to push onward in the cause of progress in civilization and humanity among men, raise the moral worth of our people, and set to other communities an example of industry and sobriety.

This vast structure, to be dedicated to the cause of Industry, Art, and Science by the gifted speaker who will address you this morning, is tangible evidence of the direction of public sentiment, and of the forces that emanate from that sentiment.

It was the general wish that an Industrial Fair should be held in this city during the present year. The thinking part of the community said these exhibitions are good for the public weal; they are public benefactions; they possess no downward tendencies; they better mankind by disseminating the facts of results produced, and suggesting fresher and newer ideas that press onward toward perfection, expressing the thoughts of genius through the mechanical contrivances of man, and enabling neighbors and commercial friends to catch from the inspiration of the surroundings an appreciation of our efforts, ultimately developing into relations of amity and commerce.

FROM A SOCIAL STAND-POINT.

And, from a social stand-point, these exhibitions are equally a necessity. Elsewhere, in more favored summer climates, the parks, the public walks out of doors offer opportunities for public gatherings; here in San Francisco the driving wind and damp fogs from the ocean prohibit out-door gatherings. Even before fireworks were driven from the Fourth of July order of exercises, the proscriptive point of pyrotechnic enjoyment was to calculate the exact moment of disappearance in the fog of the ascending sky-rocket, and to get out of the way of the descending stick. Under this canopy of carpentry, this structure dedicated to the mechanic arts, the people of this city can gather, protected from exposure to our sea-fogs and summer winds, and enjoy the music from a well-trained orchestra of excellent musicians, wander through avenues flanked by specimens of industry and art, or stroll in the quiet o the art galleries among efforts in the department of the higher arts.

REMARKABLE GROWTH OF THE INDUSTRIAL INTERESTS.

Seventeen years ago San Francisco held its first Industrial Fair. A plain, simple pavilion, whose total dimensions were less than to-day is set apart fo and occupied by the fine art department of this exhibition. James Lick generously gave the use of the land it then occupied, now covered by the Lick House. Then the whole interest of this State was centered in its mines. A few specimens of wheat were exhibited by some visionary exhibitors, who thought that certain portions of California might, with proper care and irrigation, raise grain. The immense valleys of the Sacramento and the San Joaquin, and all the lesser valleys, were known then as now, but the imagination of the wildest of these visionary exhibitors could not have pictured a yield in 1874 of thirty-one million bushels of wheat, or a surplus for exportation of 700,000 tons, giving employment to two ships, of one thousand tons each, per day, the year round, to carry off the surplus crop.

But doubtless you will find in this exhibition other exhibitors equally a visionary, who, seventeen years hence, will find their visions of to-day as a star in the firmament of realization.

Who would have prophesied seventeen years ago that a structure like this would have been erected in this spot? Or still less could he have foretold the contributions to the solid wealth and prosperity of this State that are now gathered together under this roof.

Every branch of industry has been steadily growing, while new ones are being developed.

These fairs mark the line of the advance, and the report of the Managers sticks in the pin that notes the line of high tide.

Not only have the mechanic arts advanced in their industrial aspect, but they have received a substantial impetus in the scientific aspect from the aid extended by institutions of learning in this State, and in a general way by the sympathy and financial help of many of those who are able to give.

The origination of the evening drawing-classes in the public schools; the munificent donations of Mr. Lick to found a Mechanical School; the steady growth and prosperity and usefulness of the Mechanics' Institute Library; Mr. Lick's gift to the same; the special efforts of the Regents of the University in organizing the Department of Mechanic Arts, which, although slow, is sure, and the general tone of public sentiment, all demonstrate the recognition of the value of the mechanic arts.

A WHOLESALE DENUNCIATION OF THE BOYS DEPRECATED.

Almost every branch of industry is now carried on in this city, and adjoining countries are looking to California for their supplies of manufactures and of commerce. A community, to be great, must be independent, and to be independent must have resources within itself; thus, we must produce and manufacture. To do this needs industry and knowledge; drones and idlers

are drags on the wheels of progress, and should not be tolerated, and every man is bound to earn at least what he eats and wears.

It seems strange, indeed, this cry of deep depravity that comes up from the lips of so many of the youths of San Francisco, when we consider the forty or fifty millions of dollars in the savings banks of this city; the 53,000 persons who attend the sixty-five churches on Sunday; the $150,000 annually paid to ministers; the $3,200,000 it costs to run the city government. There is no consolation in these figures, but there is a consolation to any one who has taken the trouble to inquire, in the fact that the boys of San Francisco are better than their reputation.

I, for one, will stand by the boys. I was a boy here myself twenty-two years ago, and now, as a man, deprecate this unreasonable, wholesale denunciation of the boys of San Francisco, who, when we pass away, will act their part in the drama of life. In the meantime, I trust they will come here. They will find much to study, and encouragement in what they see around them, and let those who have chosen a trade feel a pride in the products of the artisan and try and emulate the best thoughts they see produced in mechanical results, remembering that the possessor of that trade has a reserve capital that can never be exhausted; and although he may not be called upon to practice that trade, it is a good thing to have; it will serve *him* a good turn as it has me, if he has occasion to use it; with *that* and a fair amount of intelligence, perseverance, and industry, you are no man's slave, but an independent, free man.

A GOOD WORD FOR THE CENTENNIAL CELEBRATION.

The one hundredth anniversary of the birth of this nation will recognize the dignity of industrial pursuit in the broadest sense. In what way could such a nation as this better celebrate its centennial? A military power might call out its soldiery in martial splendor, and show to the world, by the pomp, magnificence, and numerical strength of its display, the stability of its government by the power of its army. But in the United States, when the nation or its honor has to be defended, every citizen is a loyal soldier, and the calling of such an army together would be as impossible as the nation's good sense would deem the act unworthy; but rather we prefer to show the world what we have done in the arts of peace, what the country is capable of producing, and to what industry, art and education have brought the people of the land.

You are making the manufacturers and producers of the old world tremble; your skilled mechanics have attacked them in their strongholds and taken their forts by surprise. No longer is an American mechanic treated with contempt; he is sure of respect, and I am a poor prophet indeed if I cannot foretell for your Centennial in Philadelphia a glorious achievement by a bloodless victory that will bring all Europe and Asia to your manufacturers' and mechanics' feet.

Surely the petty jealousies and bickerings about the Centennial Exposition are unworthy of a great people. An impartial jury determined that Philadelphia was the proper place to hold it; and where could it more appropriately be located than in the city where the Declaration of Independence was first proclaimed?—the venerable old Independence Hall still remaining to attest the part it took in the struggle for manhood. Historically, there is no reason why it should not be there. Logically, there is every reason why it should. Boston, New York, Washington, and, I may add, even San Francisco, agree that next to itself Philadelphia is the best place.

California has not much occasion to feel proud of the position she has taken. Her quota of subscription, all told, was but $145,000; she has subscribed the pittance of $2,000. Her last Legislature refused to aid the celebration, and to-day, California, the freshest, brightest, richest, most generous State in the Union, stands in stolid indifference, while Oregon, up north, has subscribed the whole of her quota, and proposes to do still more when the

proper time comes. Mechanics of California! step forward and show to the people of this Union that you appreciate the Centennial, by your acts, your sympathy, and pecuniary aid; and when, in 1876, the grand gathering of the industries of the country occurs to celebrate the one hundredth anniversary of this nation's birth, let California's patriotism, genius, and talent take the front rank among the States of the Union.

THE INTERNATIONAL EXHIBITION OF CHILI.

Next year the prosperous and liberal republic of Chili will hold an international exhibition. The government of this sister republic sends greeting, and cordially invites you to participate in that exhibition. Chili is alive to the spirit of the age; her energy and perseverance in overcoming natural obstructions to interior navigation and transportation, her broad and liberal treatment of her own people and of foreigners, the enlightened policy of her government, her sympathy with our own country, and the field for our manufacturers and inventive genius, give assurances that those who contribute to the exhibition at Santiago will be well repaid. The Consul-General, Senor Casanueva, has personally taken much interest, and informs me that he will be glad to confer with any one at any time, and for this purpose will have an office in this building.

THE MECHANICS' INSTITUTE RECOGNIZES THE SERVICES OF FRIENDS.

For this Industrial Fair and this building, these ceremonies will dedicate through the lips of the distinguished gentleman who will shortly address you. We are indebted to the public-spirited citizens of San Francisco, whose hearts are larger than their purses are deep; and of whom not a few grow richer in soul in a much greater ratio than in purse; and if it were not for the tacit injunction laid on my lips at this moment, I would tell you the name of the first man I went to, and who contributed $5,000 as a loan without interest on the mere faith of the enterprise. He believed in it, and in the Mechanics' Institute, under whose auspices, but not responsibility, these exhibitions were gotten up. And thus you see this elegant structure, with its four and one-half acres of floor-space, two million feet of lumber, some of which was growing in the forest three months ago, its one and three-quarter millions of shingles that cover its roof, its three thousand five hundred gas-jets that light it up at night, its one and one-half miles of gas-pipe, and with all its fixtures and fittings, and et ceteras that have cost in the aggregate over $100,000 in gold coin, is due to the great industrial resources of the people of this city, to the genius and skill of our mechanics, and to the $60,000 loaned to the Managers by the open-hearted men of San Francisco.

For the design of this building we are indebted to David Farquharson. It speaks for itself, and has louder lips of praise than I can command.

We owe the construction of the building to James Drury, who did his work faithfully as an honest mechanic, and expeditiously as a man who values his work and time.

The exhibition will probably continue for five or six weeks, and each week will add to its interest and perfection. The Managers have never failed to keep faith with the public as to the day and hour of opening. Exhibitors are not so punctual, as the many bare spots can verify; but every available foot of exhibiting space has been engaged for some time, and a few days will radically change the appearance of the hall. There will be much to delight and instruct, and, while the Mechanics' Institute most heartily bids you welcome, it trusts that the exhibition may end as pleasantly as it has begun, and enable the Managers to stick another pin at the high-water line of industrial progress.

The President then introduced the orator of the day.

ADDRESS OF COL. W. H. L. BARNES.

LADIES AND GENTLEMEN: There is a legend preserved in a quite respectable family, away in Massachusetts, that he who addresses you was a querulous and talkative boy, and he was repeatedly and again told by his much-afflicted parents that boys should be seen and not heard. I have thought to-day if my venerable father could only be here he would enjoy, for once in his life, the pleasure of seeing me without hearing a single word I said. But, Mr. President, it affords me sincere pleasure to be permitted to congratulate you and the useful organization over which you have the honor to preside, upon the inauguration of its Industrial Exhibition for the year 1874, and the completion of these elaborate and costly preparations for the display of the competitive industries of California. To the most casual observer, who wanders through this enormous structure and scans the fruits of genius, the mechanical skill, the arts, and sciences here illustrated, and upon whom will burst with wonder and delight the treasures here soon to be displayed, and manifested, the spectacle will be full of interest. The more thoughtful will here learn lessons not soon to be forgotten, but long to be remembered after its hospitable doors shall have been closed and this palace of our working Aladdins shall have been destroyed to make room for another more permanent and costly. Here he will learn what "men his brothers, men the workers in life," have been achieving while he has been engrossed in his peculiar and necessarily selfish existence. He will recognize how much more there is in the world than he has given to it. He will be liberalized, enlarged, and stimulated to an effort to keep pace with the ceaseless progression of this age of marvels, and to add something from his store, be it little or much, to that progression.

THE PROGRESS OF THE STATE IN THE USEFUL ARTS.

And we shall all be able, at least, to judge and estimate from this panoramic view of the useful arts what the progress of our State has been. We shall see, in this full light now shining upon these results, the sources of our honest and reasonable pride in her progress; and let us believe of inspiring hope that she will take no lowly rank among her sisters, and be no vain contestant in the pitched battle of national industries, which, inaugurated in the British International Exposition of 1851, has been progressing without cessation or rest, and whose competitions, notwithstanding all that has been accomplished, are, I believe, but the dawn of the day—the herald of man's future triumphs over Nature's ultimate secrets, and the utilization for his benefit of the forces and inscrutable laws which keep the planets in their orbits and the stars in their courses. For, though the advance of the century has been rapid, startling, and full of wonders, though the dreams of the past have become the glorious actualities of the present, it is still marching, marching on, the golden banner of hope, with the rainbow tints of beautiful promise still spanning the sky above us, and the spirit of progress seen, but undetained and unweary, hovers beyond the horizon and beckons to new and undiscovered treasures of knowledge and summons the crowded battalions of her enthusiastic votaries to attainments which shall bring them evermore nearer and yet nearer to the omniscience of the gods. We might well doubt perhaps, that much was left to be done, in considering the achievements of this century, the progress in every species of labor-saving machines, in those wonderful machine-tools which rival these wonderful arms and these deft hands of ours in their delicacy and intelligence of touch, and seem imbued almost with mind and soul, as they lessen the toil of the operative and so cheapen the cost of his manufacture; or in considering the magic of the modern modes of men communicate ideas or transport them promptly from continent to continent, or the vigor and ceaseless perseverance with which modern science has pursued nature behind the veil where the holy of holies

has rested since the world's birth, and wrung from her reluctant but loving bosom the most secluded of the secrets of her laboratories. We might well be pardoned for exclaiming that the future has nothing new beneath the sun, when we remember that the locomotive, the marine and stationary engines, the electric telegraph, the lightning printing press, and the sewing-machine, are the creations of this century. But we may safely at least assert that the history of the centuries which we know and that of those remoter circles in which moved unknown races whose arts have perished with them, could have recorded nothing greater or grander than these, or which contributed more to the ease and the comfort of man and his general wealth, intelligence, and prosperity. Of all the times gone by, this is the time to live in. If, as has been so often said, existence is to be measured by results and not by length of years, he who lives in this century accomplishes more, sees more, *is* more than the wisest of ancient sages and philosophers, or of those hoary patriarchs whose antediluvian longevity makes our brief three score and ten appear but a glimpse and a shadow of time. And while we thank the fortune which has placed us in this century and exult in it, we may well wish that life were longer or that we were also among the possibilities of the coming ages; for I confidently believe we have by no means sounded the depths of experience, and that there is infinitely more left to those who succeed us than merely to apply and use the fruit we shall leave behind us.

PLUS ULTRA.

I believe there are still powers left in Nature more swift than the silent feet of electricity which now pulsate across the slender webs of iron which Morse's discovery has woven back and forth through the length and breadth of the land, and sent through the heaving seas which separate the continents; forces which shall yet answer the summons of some magician yet to be born of woman. I am sure there will yet be some created organization of human genius more powerful than the steam-engine, whose untiring sinews shall whirl its new-created products from producer to consumer in the twinkling of an eye, and bring all men together in the universal bonds of a quicker commerce than they yet have known, and which will yet agonize the parliament of man and the federation of the world with the revision of all those freights and fares established for the earth's control by the Press and Legislature of the State of California. The arts of war shall yet possess machines of destruction more deadly than those of to-day, fearful as they are, and before which the Gatling and the Parrot cannon, the needle-gun, and the whole tribe of breech-loaders shall retire to rest with the cross-bows and battering-rams of antiquity. There yet shall be, in every household, a nimbler-fingered instrument of industry than the beneficent and priceless invention of Elias Howe, which shall clothe our descendants in more than the glory of Solomon, with but a fraction more of labor than that of the lilies of the field, who toil not, neither do they spin. So let us thank God for the present, and hope for the future.

AN HONEST PRIDE IN INDUSTRY.

I believe not only all this, but I believe that there is coming what we more need than quicker transportation for body, property, or mind, than mere economic machinery and greater comforts for the greater number, to wit: a system of political economy more complete than the unsatisfactory one of to-day, and whose special mission it shall be to put a perpetual end to the perpetual struggle between the unhappy possessor of capital and the no less miserable possessor of muscle; a system which shall prevent the rich from grinding the faces of the poor, and keep the poor from envy, hatred, and all uncharitableness toward the rich; a system which shall give to aggregated wealth in corporate or other guise, its due meed of all respect and influence and make it the minister instead of the tyrant of the individual; a system which shall so determine the relations of the troublesome many to those of

the alarmed few that none shall be left idle and everything shall be accomplished which is to be done, while leaving none without the means of honest and self-sustaining employment; a system which shall adjust the rightful claims of all to share in the general prosperity, and under whose benign sway the accumulation of wealth in the hands of the few shall cease to be the cause of discontent and agrarian envy, which shall render labor-strikes, lock-outs, and leagues impossible and unnecessary, and teach the lowly, by a new and happy experience, to regard the rich as their best trustees, holding for their good and administering for their benefit; and above all, a system of education in the arts of peaceful industry which shall bring the masses to aid in their toils, as hitherto the discipline of armies has taught them to knit the sinews of battle for bad government as well as for good; a government—and I care not how absolute it shall be—which shall bend its highest energies and make its most lavish appropriations to producing the trained soldier of the plowshare, the anvil and the loom, as well as its hero of the sword, and by whom shall be borne more proudly the iron cross of industry, gilded with the glow of the harvest and the blaze of the furnace-fire, than the other now displays its decorations of honor stained with the crimson of blood.

THE GREAT PROBLEM OF THE DAY: THE RELATION OF CAPITAL TO LABOR.

It makes small difference whether the locomotive-engine of to-day shall hereafter be cast aside to rust and decay with the toiling and creaking prairie-schooner, steered by the Argonauts of '49 across the dreary and wind-swept deserts; whether the electric telegraph may be displaced by a more efficient means of communication; whether the science of war shall be revolutionized by a more murderous method of legalized extirpation, or whether the steamship shall rot at the dock while the upper air shall feel the keels of the

> ——Argosies of magic sails,—
> Pilots of the purple twilight, dropping down with costly bales.

The great and vital problem of to-day is the industrial problem of the relations of labor and capital. It will be solved sooner than we think. Indeed, I believe there are those of us living, and perhaps in this assembly, who shall live to see it and aid in accomplishing it.

Nor is it of any avail to contrast the condition of the laborer of yesterday with that of him of to-day. However much it may have been improved, so much remains to be done before he can be justly recompensed or justly dealt with, that the whole problem practically remains to be solved. It is easier to say what should be done than to do it, and the trouble is, we have had too much theory and too little practice—too many guide-boards and too few, by far too few willing and honest travelers toward the goal which shall bring us to the millennial country where labor and capital shall lie down and be at peace with each other.

A NECESSITY FOR MECHANICAL TRAINING.

Our government has protected American industry by legislation excluding, as far as practicable by discriminating tariffs, all foreign competition. This has been well enough for capital, but labor has stood the brunt of the battle, paid the cost, and been none the better for it. It has burdened the many for the benefit of the few, and has proved as useless in fact as it has been always vicious in principle. The industries of the world are clamoring against it, and the seal of its death has been set. From this time forth American industry can only be protected by cherishing and developing the spirit of American progress, by the careful and skillful training of the industrial classes in the theory and practice of their several pursuits, by technically educating our own citizens, our boys of to-day and men of to-morrow, so that they can come proudly to the front ranks of the world's mechanics and defy competition by producing, under the stimulus of hands guided by heads, better articles and more of them than the factories and workshops of England

and Germany, and not by persisting in the mere empiricism of unremitting and unthinking toil, leave foreign mechanics and foreign shops to furnish the leaders and thinkers of our own. We shall have neither progress at home which is worthy of the age nor successful competition abroad until our mechanical training is at least equal to that which the systems of half the despotic governments of Europe have established and now maintain. Some months since, in speaking upon this subject, I affirmed what I have just repeated. The fact was denied by certain advocates of the trades unions, who took public issue with me through the Press of the city, not so much upon this proposition, however, as upon another, upon which they succeeded in silencing without convincing me, and I subsequently instituted an elaborate investigation of the fact. I addressed to every workshop and establishment where skilled labor was employed in this city a communication requesting information as to the nativity and place of technical training of the heads of their respective departments of business.

THERE IS NO SYSTEM OF TECHNICAL TRAINING.

My inquiries, in most instances, met wiih kindly and prompt responses, although some of my fellow-citizens seemed to recognize in me, not an advocate for the training of American boys to better ends than the State's Prison and the gallows (who, if mistaken, was at least sincere), but rather the hired agent of the Emperor of China, paving the way for a new irruption of heathenism, and therefore they responded with more energy than civility to my questionings. The result, however, was this: that by far the majority of the leading and practical machinists, artisans, workers in metals, modelers, draughtsmen, and skilled men in the higher grades of mechanical labor were of foreign birth and training. There were notable and marked exceptions to the rule, but it was the rule, nevertheless, and I believe it is so to-day. I made this observation then, and repeat it now in no mean spirit of exclusiveness or narrow-minded prejudice. I believe this land is wide enough to shelter all who may claim its protection and love its government; but it is still a fact, which should lead all who hope for its triumph and supremacy in the pursuits of peace as well as of war to consider whether our system of technical training is not defective, radically and ruinously defective, in that it fails to produce a race of skilled and educated mechanics able to lead not only our own workshops, but those of civilization? Indeed, if the sad truth must be told, we have no such system at all worthy the name. Here and there, some institute like this whose exhibition is now inaugurated, by its own choice, and at its own cost, aids the young mechanic to study by night, after the day's manual toil is done, the principles and theories which underlie that trade to which he is being literally brought up by hand, but there is nothing which meets the demand, and will not be until our rulers and law-makers, State and National, set about, in good earnest, and with an honest purpose, to achieve the highest results, the establishment of thorough technical educational schools and workshops, paid for out of the public purse and open to all comers as free as the vital air and God's blessed sunshine.

THE ARTISAN MUST LEARN THE PRINCIPLE AS WELL AS THE MANIPULATION.

You all remember that at the first competitive exposition of industries of all nations, held by the English in the year 1851, that nation took the lead in nearly all the products of skilled labor. Yet from that year it ceased to compete successfully with continental industry, and in the last exposition of which we have the results, that of 1868, it was fairly outstripped by its neighbors in the very branches of manufacture where it had long excelled, to say nothing of others which English mechanics had not attemptedto develop at all. Our British connections were not long in ascertaining thecause of this mortifying decadence, and, after a most thorough investigation, conducted by scientists and practical mechanics of all trades, determined that it was due to the results of that complete system of technical education which, begun in

Switzerland and followed by Austria, Germany and France, had trained and educated a class of skilled laborers, the like of which was hitherto unknown to civilization.

Without dwelling longer on this most interesting topic, it may suffice to say that our manufactures will never equal those of our competitors until we educate our artisan to become the master of the principles which underlie the mere manipulations of his trade, and fit him to commence about where his predecessor at the bench and the forge left his labor—and until we have, in dead earnest, such technic schools as I have alluded to, we may expect to be outstripped in the race for mechanical supremacy and build no better than our fathers.

A TRIBUTE TO JAMES LICK.

I am glad to say that the discussion which this subject has had in the United States has produced some results, and I am proud to assert that the first thorough technic school in the useful and mechanic arts in the United States, will soon be established in this city, through the munificence and wise generosity—untainted with selfishness or personal pride—of James Lick. Nor can it be doubted that the foundation thus laid by him will be builded on and strengthened by future gifts of individuals, if not of the State, until it shall give to our own State, at least, a race of skillful, theoretical and practical mechanics, whose labors shall bring honor and profit to the land of their birth, and bring the State at last to recognize the paramount duty which it owes its citizens on this subject, and so obtain from it what, sooner or later, will be taken from it, liberal and systematic appropriations.

I say taken from it, and I mean it. The monopoly of law-making and of disbursing the public funds, which has remained in the hands of the few, is rapidly passing into the control of the many. The classes who earn their bread by manual labor, though in this, as in all other countries, in a numerical majority, have hitherto failed to secure fair representation and such rights as they have possessed by reason of inability to concentrate their efforts and make themselves felt upon legislation. But the marked feature of our time is that these classes are learning, and very rapidly learning by combination of forces, to assert themselves and to take into their own hands the powers of the State. And capital will hereafter preserve its influence only by conceding that which if not granted, will be demanded and taken as a right.

POLITICAL DISCIPLINE OF THE FARMER AND THE MECHANIC.

The sacred art and mystery of politics, by which I mean not that spirit of statesmanship which studies how to make a nation wiser, happier, and better, but that small and intriguing occupation in policy which lives by cajoling and the false pretenses of party platforms and party leadership for power's sake, is at its last gasp. They are all alike disappearing in the cloud of mechanics' councils, patrons of husbandry, and the like organizations which are so rapidly pressing themselves into the front of all political controversies. The farmer, the mechanic, the artisan in trade, is no longer the droning slave who buys with to-day's labor the bread of to-day, and waits for to-morrow with the patience of an animal who is peaceful and harmless as long as he is fed with the coarsest of diets, and harnessed to a yoke whose chafing gear is rags. He is active, aggressive, energetically iconoclastic, and sometimes without scruple. He is undergoing a political discipline, strict and complete, and has already well breached the inmost citadel—the very Redan of capital—if he is not already in possession of it, with his lance at the throat of the propertied classes whom he has been taught, by a long and bitter experience, to distrust, if not to hate, and, whether the latter will or not, the day is at hand when the most apathetic or the most conservative must cease trying to evade the claims of the industrial classes, who not only demand fair promises of the rules of their political and social relations, but by combination, self-control and self-discipline, are learning and acquiring the means of compelling performance.

SOMETHING NEEDS ADJUSTMENT.

This general uprising is not without cause, and it shows that there is something wrong which needs adjustment, and which must be reformed, though the pillars of the social, political and monetary temple come tottering to the ground. The utilitarian slogan of the "greatest good to the greatest number" was never so much shouted before the entrenchments of capital and caste as it is to-day, and you may be certain that this century is destined to see enforced and crystalized into law whatever the laboring classes may demand to elevate their condition and sweeten their constant toil; and the sooner those who have enjoyed the monopoly of legislation in the exclusive interests of capital, corporate or individual, commence the work of reasonable concession and just dealing, the better for them and their proprietors. It may well be doubted whether all that is demanded by this new element is for its best good. At all events, it is certainly true that it will accomplish nothing by frightening the rich and by making extravagant cries for concessions and privileges for which it yields no fair equivalent, though such exactions are not to be wondered at. Injustice has always been and always will be the breeder of injustice, and when rights have been long withheld and cruel sacrifices demanded and maintained, the withholder will find that when he surrenders what he has wrongfully kept back, he will lose not merely that, but something more of his own along with it. The pent-up stream whose gathering volume of waters rises continually, and chafes against the artificial forces which, for a time, hold it back, when at last it bursts away from their limitations, does not return at once to its own and legitimate channel. It takes a wider scope, tears out new courses for itself, and, for a while, carries destruction and disaster along with it. I cannot propose to discuss or investigate the just economical foundations of the relations of employer and employed, of labor and capital, or do more than allude to the facts which constitute some of the momentous questions of the day with which institutions of this character can have much to do in the way of wise guidance and influence.

WHAT SHALL BE A DAY'S WORK?

Among the demands which the new power has successfully made, I may say of one, at least, that I do not know why law should regulate arbitrarily the extent to which the owner of labor shall use his capital during each day's toil, or attempt to control him by any absolute standard or restrictive conditions any more than why the law should make the exaction of interest for pecuniary loans a legitimate subject of legislative restraint. It has always seemed to me that legislation on the subject of labor, which declares what shall be a day's work, and makes it impossible for one to sell or for another to buy more than a fixed quantity of labor during each twenty-four hours is as unnecessary, hurtful, and unjust to buyer and seller as legislation which should restrict the price, quantity, or supply of any other commodity which men need or use. But whether this demand, and others which have been so forcibly maintained on the part of labor-chosen champions are reasonable or the reverse, the fact remains that the industrial classes are now having their day, and in their hands is fast growing an absolute power to legislate anew for themselves, and to sweep away all legislation and the creatures of legislation which are obnoxious to them.

THE INDUSTRIAL CLASSES AND THEIR INTERESTS.

The coming years will see destroyed whatever they deem hostile to their material interest, and established by their consenting judgments whatever may seem most for their advancement. That State will be the wisest, safest, and happiest which gives to them such knowledge of the real principles of economic and mechanical science as shall guide, if it cannot control, their policy and direct their aims, and, while enabling them to sweep away their disabilities and wrongs, shall not suffer them to march under these early inspirations of uneducated liberty to an uncertain or ruinous goal.

HOW THE POWER OF THE INDUSTRIAL CLASSES WILL BE REGULATED.

Fellow-citizens, sooner or later the State will learn that this new element of power, which is, in some of its aspects, so alarming, is only to be regulated and directed by that just and complete education of which I have spoken, by the development of its higher and nobler faculties, which shall inspire respect in others and teach it that self-respect through which it will regard capital not as an enemy seeking its destruction, but as an ally to its advancement, and bring us to that condition so well described by Lord Macaulay, in the lay of Horatius:

"Then none was for a party,
Then all were for the State;
Then the great man helped the poor,
And the poor man loved the great.
Then lands were fairly portioned,
Then spoils were fairly sold;
The Romans were like brothers,
In the brave days of old."

It is easy to understand, it is difficult not to sympathize with that bitter animosity of one class which toils and suffers against another which fattens upon its toil and suffering, against corporate greed and overreaching, which gathers to itself the profits of the husbandman and the richest spoils of every industry, while he who produces all grows faint and weary in unending exertions which do not improve his condition nor win him the respect of his masters. It is easy to understand how, under such conditions, labor ceases to ennoble the laborer, but rather becomes the badge of disgrace and the perpetual instigator of discontent; how idleness is so often preferred to an industry which brings to the worker no substantial or permanent profit and leaves toiling virtue to its own melancholy reward.

WHAT THE SOLUTION OF THE PROBLEM RESTS UPON.

The solution of the whole difficult problem rests, to begin with, upon the elevation and dignity of labor, recognized, fostered, cherished, and protected by law, upon its enfranchisement, by the aid of governments, National and State. It rests, also, upon the basis of that spirit of justice which shall, without law, give to the many the right to share in the prosperity of the few, in the spirit and practice of the principles of co-operation, in the profits of commerce and enterprise. If our capitalists and manufacturers can, by a just division of the profits and returns from labor, lead the men who make their wealth available and their gains secure to work with them; instead of for them; if by that species of justice they can induce labor to practice economy in material and liberality in time, by the powerful motives of mutual advantage, we shall hear no more of strikes, lock-outs, and demagogic combinations against the owners of capital, which leave the poor poorer and the rich no better off. Our trades-unions will be no longer engaged in the struggle to maintain the rates of wages by withholding or regulating the supply of laborers in the mechanical and industrial pursuits, and will suffer all to share in the profits of labor and all to have that rest which is as necessary as light and air to the health of both body and soul. Nor will then eight-hour laws be required to exact for it a higher price than it is honestly worth. Truly, the intelligent solution of this momentous problem will be of more value to the progress, prosperity, and peace of the toilers than the proudest discovery in art or science, and its final adjustment will put an end to the agrarian tendency of the age which now frightens capital and makes labor desperate.

CLASSIFICATION OF EXHIBITS.

DIVISION I.

RAW MATERIALS.

CLASS 1. MINERAL—Including Ores, Rocks, Earths, Salts, Coals, Bitumen, Petroleum, unwrought Metals, Specimens of Minerals, Asphaltum.

CLASS 2. VEGETABLE—Specimens of Woods and Vegetable Ivory; Fibres—as Ramie, Cotton, Flax, Hemps, Manila, Lichens for dyeing, Peruvian and other Barks; Products, of the Soil, other than classified in Division 9.

CLASS 3. ANIMAL—Hides, Skins, and Furs, undressed Hair, Bone, Horn, Ivory, Wool, Cocoons of Silk Worms, Feathers, Shells, Eggs, Corals, Whalebone, Specimens of Animals, Birds, etc.

DIVISION II.

MACHINERY FOR GENERATING, APPLYING, AND TRANSMITTING POWER.

CLASS 4. STEAM BOILERS, GENERATORS AND APPURTENANCES—Superheaters, Gas Generators of Power, Reservoirs for compressed Air, and Apparatus of all kinds for Generating Power.

CLASS 5. Steam Engines and Appurtenances of all kinds, including Traction, Air and Gas Engines, Water Engines, including Turbines, Water Wheels, Impact Wheels, Tide Wheels, Propellers and Paddle Wheels, Wind Mills.

CLASS 6. Machines for transmitting Power, including Pipes and Tubes; Grip and other Pulleys in combination with Ropes, etc.; Cranes, Hangers, Blocks and Pulleys; and Horse Powers, Whims, Railways, Tramways and Ropeways.

DIVISION III.

MACHINERY AND APPLIANCES EMPLOYED IN MANUFACTURING AND PRODUCING.

CLASS 7. Mining Machinery, Quartz Mills, Arastras, Amalgamating Pans, Stone Crushers, Quarrying Machines, Boring Machinery, Coal Cutting Machinery, Hoisting Machinery, Ventilating Appliances, Safety Apparatus, Mining Ropes.

CLASS 8. Mining, Steam and other Pumps.

CLASS 9. METAL WORKING—Iron Rolling Machinery, Steam Hammers, Portable Forges, Drawing Dies, Turning Lathes, Shaping and Planing Machines, Screw-Cutting and Gear-Cutting and Nut-Punching Machines, Vises.

CLASS 10. Hand Tools of all kinds used in the Mechanic Arts.

CLASS 11. WOOD WORKING—Saws, Saw Mills, Planing Machines, Mortising, Tenoning, Scroll Sawing, and other machines, Turning Lathes.

CLASS 12. AGRICULTURE—Plows, Harrows, Seeders, Harvesters, Threshers, Hay Presses, Shelling Machines, Hay Cutters, Cider Mills, Wine Presses, Agricultural Tools and Implements.

CLASS 13. Steam Plows and Cultivators, Sugar Mills (Beet and Sorghum), Machines for Breaking Flax, Ramie, etc.

CLASS 14. Machinery of various Manufactures, including Paper Making, Paper Ruling, Weaving, Spinning, Rope Making, Printing, Stamping, Type Making and Type Setting, and other Machinery and Appliances not previously classified.

CLASS 15. Sewing Machines, Knitting and Buttonhole Machines.

CLASS 16. PHILOSOPHICAL—Sextants, Quadrants, Surveyors' Instruments, Calculating Machines, Scales, Astronomical Instruments, Electric Machines, Telegraph Apparatus, Watches and Clocks.

CLASS 17. Dental Work and Machines, Surgical Machines and Appliances, Trusses and Orthopedical Appliances of all kinds.

DIVISION IV.

PRODUCTS OF MANUFACTURES AND TRADES.

CLASS 18. MANUFACTURES IN METALS — Including Pig, Bar and Rolled Iron, Plain and Ornamental Casting, Stoves, Crude Statuary in Iron and Bronze, Wrought Iron Work, Sheet Iron Work, Carriage Smith Work.

CLASS 19. Locksmith Work, Cutlery, etc.

CLASS 20. Brass, Tin, Lead and Composite Castings, Brass Finishers' Work, Copper Still Worms, Pipes and general work, Lead Pipe, Sheet Lead, Shot, Plumbing, Gas Fittings, Tin Ware, Wire Work, other than in Class 53.

CLASS 21. Electroplating, Electrotypes, Stereotypes, etc.

CLASS 22. MANUFACTURES IN WOOD—Including Sawed Lumber and Timber, House Carpenters' and Joiners' Work, Scrolling, Turning and Moulding.

CLASS 23. Casks, Barrels, Tubs, Pails, Kegs, Wood and Willow Ware, Brushes.

CLASS 24. Furniture, Tables, Chairs, Bedsteads, and Cabinet Work generally.

CLASS 25. Carriages, Wagons, etc.

CLASS 26. Manufactures in Glass, Earthenware, Pottery, Stone, Glass Blowing, Cutting, and Coloring in process of manufacture, Bottles, Demijohns, Globes, Window Glass, Mirror Glass, Crockery, Porcelain, Fire Proof Ware.

CLASS 27. MANUFACTURES IN LEATHER, RUBBER AND GUTTA PERCHA—Harness, Saddlery, Boots, Shoes, Hose, Trunks, Valises and Buckets.

CLASS 28. MANUFACTURES OF WOOL, COTTON AND SILK—Furs, Blankets, Woolen Cloths (Clothing and all materials made from either of the foregoing, or mixed.)

CLASS 29. Millinery, Dress Making, Cloak Making, Sewing Machine Work, Crochet Work, Knitting, Toys, Laces, Embroidery.

CLASS 30. Manufactures from Fibres and Pulp—Embracing Hemp, Manila, Flax and Ramie ; Hemp and Manila Cordage, Twines, Paper from Rags, Straw and other material, Papier Mache.

CLASS 31. Various Manufactures not Previously Classed—Upholstery, Paper Hangings and Decorations.

DIVISION V.

ENGINEERING AND ARCHITECTURE.

CLASS 32. Naval Architecture and Engineering — Including Models and Designs of Ships of War and Commerce, Boats, Yachts, Barges, Life Boats, and Life Preservers, Marine Charts, Light Houses, Marine Signals, Warm-tide Floating Swimming Bath, Flags and Buoys, Diving Apparatus, Submarine Boats, Floating Batteries, Torpedo Boats, Ancient Vessels and Transports.

CLASS 33. Military Engineering and Architecture—Armor, Ordnance, Firearms, Gunpowder and other explosive material, Tent and Camp Equipage, Accoutrements, Gun Carriages and Apparatus, Matches, Fuses, Pyrotechnics, Designs and Models of Fortifications and Land Defences, Military Bridges, Pontoons, Signals, Flags, Modes of Mining, Ancient Armor and Equipments, Cases of Medicaments for Army Surgeons, Ambulances.

CLASS 34. Civil Engineering and Architecture—Comprising Architectural and Building Designs and Models, Ornamental Stones, Lime and Mortar, Cement, Artificial Stone, Beton, Tiles, Flags, Drain Pipes, Brick, Slate, Roofing Material, Preserved Wood, Apparatus and Method of Testing Material, Piles, Screw Piles, Modes of Obtaining Foundation, Material for Roads and Repairing the same.

CLASS 35. Plans and Drawings of Public Works, Bridges, Aqueducts, Sewers, Workmen's Residences, Sanitary Appliances, Agricultural Engineering.

DIVISION VI.

WORKS OF ART.

CLASS 36. Painting in Oil and Water Colors.

CLASS 37. Chromos, Crayons and Porcelain Painting and Drawings, as distinguished from Architectural Designs.

CLASS 38. Sculpture, Cameo Cutting, Statuary, Plaster Works of Art, and Carving in Wood.

CLASS 39. Pressed and Chiseled Medals, Engraved Stones, and Lapidary Work.

CLASS 40. Coloring, Staining, Bending and Embossing in Glass, Articles of Taste in the Precious Metals and Stones, and Imitation Lapidary Work.

CLASS 41. Gold Ware, Silver Ware, Watch Cases, Jewelry.

CLASS 42. Lithography, plain and in colors, Engraving on Copper, Steel, Wood, Stone, plain and in colors, Photography, plain and retouched.

CLASS 43. Wax Work, Hair and Rubber Jewelry, Light Articles of Taste and Device Work.

DIVISION VII.

THE LIBERAL ARTS.

CLASS 44. Specimens of Printing, Publishing, Specimens of Typography, Proof Sheet of Autography, of Lithography, of Engravings, New Books, Collection of Books, forming Libraries on Special Snbjects, Periodical Publications, Technical and School Atlases, Albums, Celestial and Terrestrial Globes.

CLASS 45. Book Binding and Stationery, including Paper Cards, Pasteboards, Pens, Inks, Pencils, Copy Books, Registers, Elastic Bands, Paper Boxes, Lamp Shades, Paper Ruling.

CLASS 46. Sign Painting, Scenic Painting, Staining, Polishing, Graining, Marbling, Lettering, Ornamentation in Oil and Water Colors.

CLASS 47. Musical Instruments, Wind Instruments, Metallic, Reed and String Instruments, Pianos, Organs, and Melodeons.

DIVISION VIII.

CHEMICAL PROCESSES AND PRODUCTS.

CLASS 48. Metallurgical Processes—Roasting and Smelting Furnaces, Blast Furnaces, Methods of Reduction, Evaporation, Condensation, Processes of Generating Illuminating Gas.

CLASS 49. Processes and Products of Domestic Economy — Flour, Bread, Crackers, Maccaroni, Spices, Preserved and Condensed Meats, Preserves, Sugars, Candy, Butter, Cheese, Tapioca, Vermicelli, (and generally under heading of groceries,) Dried Fruit of all kinds.

CLASS 50. Fermented Cereal and Vinous Products — Sparkling and Still Wines and Liquors.

CLASS 51. Bitters, Cider, Ale, Porter, Beer, Vinegar.

CLASS 52. Chemicals and Pharmaceutical Products—Acids, Alkalies, Wax, Soap, Perfumery, Rosins, Essences, Dyes, Varnishes, Painters' Materials, Processes of the Laboratory, Bleaching, Dyeing, Curing, Tanning, Vegetables and Animal Oils, etc.

DIVISION IX.

POMOLOGICAL AND HORTICULTURAL.

CLASS 53. Hot Houses, Summer Houses, Garden Vases, Flower Stands, Wire Stands, Fountains, Appliances for the Horticulturist, Objects of Ornamentation for the Garden, Miniature Gardens.

CLASS 54. Plants in Pots and Beds—Indigenous, Imported, Hybrid.

CLASS 55. Fruits.

CLASS 56. Garden Vegetables.

CLASS 57. Cereals—Corn, Wheat, Oats, etc.

CLASS 1.

MINERALS, CRUDE PRODUCTS, ORES, ETC.

Rhodes & Wasson, Samples Borax and Soda.
Thos. Ogg Shaw, Samples Iron Ore for making Vermillion Paint.
F. H. Merrill & Co., Samples California Lustre, and California Pumice Stone.
Carmen Island Salt Works, Salt in Glass Case.
J. L. Merrill, Soapstone, Patent Soapstone Samples on Wood and Tin, Rock in original state.
E. K. Stevenot & Co., Nevada Borax.
John E. Burns, Straw-colored Sandstone from Port Townsend.
Chas. F. Kirschner, Ore.
Musto Bros., Two Marble Lions from Italy.
Pacific Chemical Company, Twenty-two Cases Minerals and Fossils.
A. Doud, Crude and Sal-Soda.
Renton Coal Company, Coal from their mines.
D. Jacks, One Box of Sand and one of Gravel, from Monterey.
Strong & Co., Minerals.
San Francisco *Journal of Commerce*, Pacific Coast Minerals.
O. P. Sutton and George Tait, Sixteen Cases Minerals.
Chas. H. Fischer, Collection of Minerals in cases.
Captain James Bluxome, Iron and Iron Ore from Oregon Iron Company.

RAW PRODUCTS.

CLASS 2.

VEGETABLE — SPECIMENS OF WOODS AND VEGETABLE IVORY, FIBRES,—AS RAMIE, COTTON, FLAX, HEMPS, MANILA, LICHENS FOR DYEING, PERUVIAN AND OTHER BARKS; PRODUCTS OF THE SOIL, OTHER THAN CLASSIFIED IN DIVISION IX.

C. F. Chadbourne, Nerve, Globe, Standard, and Granger Chewing Tobacco.
Charles H. Fischer, Collection of Shells in case.
J. T. Stratton, California-grown Eucalyptus.
Henry F. Stivers, Pacific Coast Woods. An extensive show of Mexican and California woods.
Mme. J. F. L. Nanus, California Flax and Hemp. Well-grown, with very strong fibre.
San Francisco *Journal of Commerce*. The only extensive display of the products of the Coast was made by the proprietors of this journal, and their exhibit was among the most interesting in the Fair. Several hundred samples

of wheat from every part of the world attracted great attention, and a comparison of those from our own State with the samples of Chilian, Russian, Australian and Canadian was gratifying to our State pride, particularly when we recalled the time, not long gone, when the first sample of California wheat was a curiosity. There were stalks of Barley and Oats of astonishing length and stoutness, a Hop vine nine feet high, from Santa Clara county, and cotton of singular whiteness and length of fibre, from Fresno county, besides Flax from Oregon, Beet Sugar from the Sacramento Company's works, Dried Fruits, etc. Of Minerals, there were Crude Soda and Soda Crystals from Nevada, Iron from the Oregon furnaces, and Coal from every part of the Coast, besides building stone, slate, etc. The wool exhibited by this firm was the chief representation of our wool product, now close on 40,000,000 pounds.

H. D. Dunn, Japanese Consul, a fine show of woods from Japan, forwarded by steamer, with a view of bringing them to the attention of cabinet-makers, carriage-makers, &c. These woods can be laid down here much cheaper than they can be obtained from the Eastern States. They consist of thirty varieties, and are from the Island of Yezo, of which Hakodadi is the port of entry.

I. C. Woods, Wood eaten by marine worms; Wood protected against worm; Wood eaten by wood-boring beetle; Wood protected against wood-boring beetle; Samples Seasoned and Preserved Wood. This collection was extremely interesting, from the contrast between the wood protected by creosote and absolutely untouched by the worm, and the same kind of wood completely eaten out and honey-combed. The specimens had been submerged in the same spot, and for the same length of time.

Morris & Frankel, one Case Cigarettes.

Consolidated Tobacco Company, eleven Cases Tobacco and Cigars. These specimens were manufactured of tobacco grown on the plantation of the Company at San Felipe and Gilroy, and cured by the Culp process. In quality, the Cigars and Smoking Tobacco are ranked among the very best.

J. Kentfield & Co., one Redwood Plank, seven feet wide, four inches thick, from Jones' Mill, Eureka.

CLASS 3.

RAW MATERIALS—ANIMAL KINGDOM. HIDES, SKINS AND FURS, UNDRESSED; HAIR, BONE, HORN, IVORY, WOOL, COCOONS OF SILK-WORMS, FEATHERS, SHELLS, EGGS, CORALS, WHALE-BONE, SPECIMENS OF ANIMALS.

The exhibits in this class were almost wholly confined to curiosities, stuffed birds and animals, and the like. Some of the collections of these articles were very attractive.

Watson & Barnhardt, a Case of Stuffed Birds, very well arranged.

John Keogh, Bales of Live Geese Feathers, and Hair, besides Bales of Black Moss for mattresses.

San Francisco *Journal of Commerce*. The display entered by the proprietors of this paper was, in some sort, a compendium of the products of this Coast. It contained Beet Sugar, Hops, Flax, Cotton, Grain, Coal of several kinds, a great variety of Ores and Minerals, etc.

Dr. B. F. Lyford, a Working-Model of a Box for the planting and propagation of oysters—an ingenious and practical method, now in operation in some of the lagoons in this county.

William Tiffany, Curiosities of a most varied kind, ranging from Confederate money to Chinese shoes.

E. F. Lorquin, Case of Stuffed Birds, admirably finished and life-like, Shells, Stuffed Monkey, etc.

A. C. Robison, a number of beautiful and rare Shells, Coral, and colored Seaweeds.

Ed. Slawson, Four Eggs, of the Brahma Fowl.

F. Gruber, six Cases of Stuffed Birds and Animals, remarkably well prepared and arranged.

Hermann & Co., Case of Shells, Corals, etc.

J. Hartley & Co., Case containing various specimens of California Wool.

Charles H. Fischer, a Case of Birds, with Bird's Eggs, and Sea Shells.

CLASS 4.

STEAM BOILERS, GENERATORS, AND APPURTENANCES, SUPERHEATERS, GAS GENERATORS OF POWER, RESERVOIRS FOR COMPRESSED AIR, AND APPARATUS OF ALL KINDS FOR GENERATING POWER.

J. Curle, Root's Wrought-Iron Sectional Safety Boiler. These boilers are made in different sizes, from a three-horse power up to two hundred. The average weight of the boilers is about two hundred and fifty pounds per horse power. The boiler is made in uniform and interchangeable parts, and all parts are easily accessible for cleaning. The distinctive claims made for the boiler by the manufacturers are: Safety from destructive explosion, the utmost durability, highest economy of fuel, and reasonable price. The working portion is composed entirely of wrought-iron boiler tubes, which are tested to a pressure of five hundred pounds per square inch. The largest boiler is equal in strength to the smallest, as all are composed of a greater or less number of the same parts, uniform in size and strength. This peculiarity of construction secures very light weight and small size of parts. The largest boiler can be carried into the most difficult places, and it admits of mule transportation in mining and mountainous regions. Injured parts can be readily renewed without disturbing the rest of the boiler. The manufacturers state that it is a very rapid generator, raising steam to start the engine in ten to twenty minutes from cold water, and does not require an educated engineer to accompany it, and work it.

E. M. Dudgeon, five Hydraulic Jacks.

San Francisco Boiler Works, one Boiler.

W. H. Burton, Felt for Boilers. This felting is non-conducting, and is said to be superior to any other. It is specially adapted to kitchen boilers and pipes of all kinds.

J. Martenstein & Co., one Water Guage.

Robert Ash, Spark-Arrester and Smoke Stack.

CLASS 5.

STEAM ENGINES AND APPURTENANCES OF ALL KINDS, INCLUDING TRACTION, AIR AND GAS ENGINES, WATER ENGINES, INCLUDING TURBINES, WATER WHEELS, IMPACT WHEELS, TIDE WHEELS, PROPELLERS, AND PADDLE WHEELS, WIND MILLS.

L. M. Henry, Model Steam Engine.

H. J. Booth & Co., one Upright Engine, two Horizontal Steam Engines, two Governors, one Watson's Steam Packer. These engines appeal to the

judgment of every one as being the machines needed for this coast. The cylinders are twelve-inch bore, twenty-four inch stroke, having the steam chest and foundation cast in one piece; the steam ports are very short, being nearly at right angles to the face of valve. The valve has a large lap and quick stroke. The bed embodies the well-tested and correct principle of central bracing, first introduced by Corliss, and in this case most admirably carried out. The pillow block has the most improved method of adjusting the quarter-brasses, which ensures a complete support on the entire surface of the brass, while being adjustable in every direction. The foundation is cast to the pillow-block, making a most complete and simple equivalent for the old, expensive, and cumbersome bed. The crank, top of pillow-block, steam-chest, throttle-valve, fly-wheel and governor, are all splendidly finished, and in harmony with the general design. The valve-stem and eccentric rod connection are carried in a simple and mechanically designed guide, accessible and substantial. The cross-head has large gib surfaces, adjusted by set screws, and within reach and in sight at all times. The cross-head pin is of steel, with an automatic oiler attached. The lower slide is supplied with oil from a stationary oiler under full control of the engineer, while the engine is in motion. In fact, every part of the engine seems to have been designed with especial reference to the convenience of lubrication, adjustment, and repair. The oilers used are the Dreyfus Glass oilers on the wearing, and the Seibert Eureka oiler on the cylinder. One engine is fitted with Watson's steam-packing for the piston rod, and one with the old-style hemp packing. The governors are of the Lamatt patent and Hendy's manufacture, embracing the automatic stop in case of breakage of belt or gear, and have separate adjustment for nice regulation of speed; they are well built and nickel plated. The cylinders are cased with black walnut, held in place with silver-plated screws. All the nuts are supplied with finished washers, something not usually done, though it adds much to the general appearancc. The engines are intended to be used for the Palace Hotel, now building, and we congratulate the owners on the wisdom of their selection. If the rest of the appurtenances of that hotel are made in keeping with the engine, the public can have no fault to find.

Hawkins & Cantrell, one Upright Engine.

J. M. Keeler, one Kipps' Engine, one Foot-Valve. This engine has lately been introduced on this coast. It is peculiarly suited to places where room is limited, and is held to have more power for the space occupied, than any engine in use. Since its introduction, it has been examined by several prominent engineers, who give it their unqualified approval.

A. L. Fish, one Steam Fire Engine.

Leffel & Myers, three Water Wheels, one Flume for Wheel, Myers' Horizontal Flume. This new flume is very inexpensive in contrast with the cost of the old kind, and is very satisfactory in its adaptation to the purposes required, as by its use the wheel can be placed anywhere in the mill, and no leak or loss of water is experienced. As the case is made of iron, and the water conducted to the flume by iron pipes, all these can be made so perfect as to entirely avoid leaks, under the greatest pressure, and by belting directly from the water wheel shaft the expensive bevel gears are avoided, and in consequence much power saved. Where receiving any reasonable degree of care, these flumes will last a lifetime without repair.

Leffel Water Wheel.

Treadwell & Co., one Stationary Hoadley Engine, two Gardner Governors, eighteen Steam Guages, one portable Hoadley Engine, fifteen horse-power. The efficiency and safety of these engines have been very generally acknowledged in all parts of the Union. Many improvements have been made from time to time to their original construction, under the immediate supervision of Mr. Hoadley himself, one of the latest and not the least of which is the automatic variable regulating cut-off, which adds greatly to its economy of power.

One Hydraulic Ram.

Treadwell & Co., one Turbine Wheel. In a certificate given by Mr. Emerson, after giving the American Turbine a thorough trial in his testing-flume at Holyoke, he says; "The average results of the whole gate tests of this wheel and the partial gate tests, have been equaled in my experience." At the last test the following results were obtained: Percentage of part gate, one-fourth, 50.08; one-half, 69.64; five-eighths, 78.73; three-fourths, 82.53; seven-eighths, 82.90. Percentage of whole gate, 83.14.

One New York Engine.

Goodwin, West & Co., one Steam Fire Engine. This machine is manufactured in this city, and is supplied by the well-known Goodwin pump. The engine itself is very handsome in its finish and ornamentation, and is said to weigh five hundred pounds less than a second-class Amoskeag engine. The pump is so placed that it can be readily taken apart without interference with the working gear of the engine or any other part of the machinery.

A. H. Southwick, Model of Dexter Windmill.

C. F. Marwedel, one Steam and Water Guage.

W. I. Tustin, the Economy Windmill. This probably combines as many advantages and improvements as can be found in any.

One Eclipse, single horse-power.

One Economy, single horse-power.

One do two horse-power.

One Monitor, two or four horse-power.

M. C. Hawley & Co., one Portable Engine, two Novelty Fan Mills.

Baker & Hamilton, one two horse-power Baxter Engine, one Ames' ten horse-power Portable Engine.

Huntington, Hopkins & Co., one Ryder's Hot-air Engine and Pump. This engine has thus far met with much favor wherever it has been introduced, and it certainly appears to be an important step towards meeting the requirements for an economical, safe, and reliable engine for light work. It is comparatively noiseless, works very steadily, and is compact and simple in its construction. The one on exhibition, we are assured, can be worked up to two horse-power, with the use of from fifty to sixty pounds of coal for each day of ten or twelve hours, with continuous work, and it requires no more care or skill in attendance than does an ordinary stove. There is no water or steam, no water or steam pipes, or boiler, to care for, consequently there is nothing to explode or endanger, and but little to get out of repair, beyond what is attached to an ordinary office stove; in fact, it is much simpler than a kitchen stove with its accompanying furniture. It occupies but a small amount of space: $3\frac{1}{2}$ x $2\frac{2}{3}$ feet on the floor, and 7 feet in height.

Steam Guages.

Joshua Hendy, four Governors.

W. J. Weir, Miniature Steam Engine.

A. Cook, Silsley Rotary Steam Fire Engine. The advantages claimed are the reduction in size in proportion to the power, avoidance of strain and the great saving of power which is expended in the reciprocating engine in overcoming the inertia in changing the direction of the motions. Hose used on a rotary engine will wear much longer than that used on a piston engine, as it lies perfectly still while the machinery is in motion. One man can hold the pipe on this engine as easily as three can that on a piston engine.

CLASS 6.

MACHINES FOR TRANSMITTING POWER, INCLUDING PIPES AND TUBES; GRIP AND OTHER PULLEYS IN COMBINATION WITH ROPES, ETC.; CRANES, HANGERS, BLOCKS AND PULLEYS, AND HORSE-POWERS, WHIMS, RAILWAYS, TRAMWAYS, AND ROPEWAYS.

C. N. Andrews, Centripetal Force Rollers.

A. S. Hallidie, one 4-foot Patent Grip Pulley, for the transmission of power by means of ropes; one Patent Endless Wire Ropeway, for transmitting ores

and other materials over mountainous roads. These inventions may be briefly described as follows: At certain distances, say from one hundred and fifty to three hundred feet, between the mine and the mill, are erected substantial posts, each post having a cross arm at the top, to the extremities of which are attached two sheaves, a lower and upper, placed one immediately over the other, and which revolve freely on a horizontal spindle. The groove of the lower sheave is made exactly to fit to half the circumference of a wire rope which runs in it, and the groove of the upper covers one-fourth of the circumference of the same rope, so that it is impossible for it to leave its place. At the mine, and also at the mill or reducing works, these points being extremities of the line, a grip pulley is placed horizontally. Around these pulleys, and along the entire line, supported and kept in position by the sheaves attached to the posts, there is stretched an endless steel wire rope. On this, at a distance of about fifty to one hundred and fifty feet, are firmly attached receptacles for conveying and transporting ores, etc., which, by virtue of a peculiar arrangement, pass freely alongside and by various obstacles in the way of posts, sheaves, etc., up hill and down, around corners and over gorges, until they reach the mill, where they discharge their contents by a self-dumping or other contrivance. The descending boxes, fixed on a rope, which is a double or endless one, carry themselves down by their own weight when there is sufficient descent, and the part of the rope to which they are attached with them, while the other portion of the rope, with the empty boxes, is carried back to the mine. Usually there is no separation of the receptacles containing the ore from the wire rope at any time during its transit, and they pass the various sheaves and pulleys without interruption. The function of the grip pulley is to hold the rope so as to prevent it slipping in the groove. Sometimes it is possible to obtain considerable power by gravitation, on account of the difference in altitude between the mine and the mill. In this case the power can be transmitted by the grip pulleys; but when there is no power obtained in this manner, it is given by a water-wheel or steam power. The receptacles are small sacks, self-dumping boxes, or other arrangements, which contain from fifty to three hundred pounds of ore or other material, and the means of attachment to the rope are very simple and effective.

D. McKenzie, one Horse-Power, six-fold geared. The entire gearing of the Power is encased in an iron box or casing of novel construction, which excludes the dirt and dust, and obviates all danger to life and limb; it also forms an iron frame of ample stiffness for holding every journal in a perfectly parallel line. Every wheel and pinion is constructed and hung in such a manner as to secure an equal wearing pressure the full length of each journal and breadth of each cog. The levers and braces are attached in such a manner as to allow of their free vibration up and down, whenever there is any jerking of the team, thus preventing any twisting or unfair strain on the gearing. The bevel wheel is hung upon a stiff shaft about three times as long as the radius of the wheel, and is set and firmly held in gear by raising the step in which the lower end of the shaft revolves by means of set screws or a bridge tree, similar to the manner in which mill spindles are raised, the bevel wheel being inverted and acting on the under side of the bevel pinion. This arrangement entirely obviates all difficulty in keeping the bevel wheel gear properly adjusted, which occurs in the use of other powers, and saves all friction with travelers or rollers. There is eight times the square inches of wearing surface of cogs engaged more than is on other powers. There is from six to twelve times the amount of wearing surface on the journals. The strength of the large size is more than four times as great as any other power in use in California. These causes so completely obviate friction that one oiling per day of cogs and journals is sufficient. The friction is so small that from fifty to eighty days' wear is required to get the cogs and journals fairly polished to first-rate running order. Twelve light horses are able on this Power to do

nearly double the amount of threshing that they are able to do on other powers, whenever the Power is used according to directions.

W. I. Tustin, "Economy" Horse-Power, "Eclipse" Horse-Power, and "Monitor" Horse-Power. These horse-powers, manufactured by Mr. Tustin for years past, have earned a high reputation among machinists. The "Economy" is intended for all purposes, such as pumping water for irrigation, chopping feed, sawing wood, turning machinery for manufacturing or other purposes. The "Eclipse" is for light work.

C. P. Hatch, one Horse-Power.

Atwood & Bodwell, two Horse-Powers.

CLASS 7.

George Atkinson, one Churn Drill.

Joshua Hendy, two Concentrators, two Ore-Feeders.

R. Hoskins, three Little Giants, one Clipper, and one Distributor.

F. B. Schoenstein, Model of Cobble-stone Facing Machine.

Murdock, Taylor & Co., eighteen Babcock Fire Extinguishers, and one Self-Acting Fire Engine, twelve Leather Buckets, thirteen Life Protectors, two Fire Axes, Hose.

William Quinlan, Tripartite Chain Connector. This little apparatus is the recent invention of William Quinlan, of Mayfield, Santa Clara county. The link is so constructed that it can be used for connecting any two links of a chain in almost an instant, so as to unite two or more chains into one continuous chain, or repair a broken one. The link can be made of any desirable size so as to correspond with the links of a chain of any size. It is also useful as a coupling in many places in the hands of lumbermen, teamsters, millers, carmen, and others, and is a useful and convenient implement. It is made in a simple manner, with no hinges or angles, and will pass through any opening or over any pulley through or over which the ordinary chain links will pass. The link may be used for many other purposes, such as a tug attachment to single-trees, clips, or other similar fastenings.

Park & Lacy, No. 4 Air Compressor, Air Tank, No. 1 Pump, Mining Drill and Clamp, Stoping Drill and Clamp, Drill Carriage, Tunnel Drill, two stoping Drills, and tripod. The display made by this firm was one of great commercial value, as the machines shown are fast coming into use in our mines, where they facilitate and cheapen operations. The machinery shown composed a No. 4 Air Compressor, capable of running four tunnel-size Burleigh drills. The compressors of this size are extensively used on the Comstock lode, Nevada, for running drills and hoisting engines on the lower levels. They are also used there for running small blowers in deep mines. A large tunnel drill and tripod was shown, adapted for large shaft sinking, or all classes of submarine work. A mining size machine was shown in practical operation, for stoping, shaft-sinking and running small drifts. They also exhibited a small stoping drill, mounted on mining carriage, and another mounted on a plain column for shaft sinking or raising, stoping in ore beds, etc. Another small stoping machine shown was mounted on an adjustable tripod for out-door work. This machinery is also known as the Burleigh Drilling Apparatus. The compressors and drills are in operation in the Belcher, Yellow Jacket, and Overman mines, Gold Hill, and the Consolidated Virginia, Gould & Curry at Virginia City, and also in the Sutro Tunnel. They are also at the Idaho mine, Grass Valley, Mariposa Land and Mining Company, Mariposa county, California; Gold Run Ditch and Mining Company, Gold Run; Cedar Creek Mines at Dutch Flat, and at the Golden Star Company's mines near Alleghany, Sierra county, California. In Utah they are in use at the Bay City Tunnel, and in Montana at the National Mining and exploring Company's works at Helena. These have all been put in operation on this coast within the past twenty months. The Air Com-

pressor is a very perfect machine, and its simplicity can be seen at a glance. It gives good results and can be run at any rate of speed. The drills are all built to stand a great amount of hard usage, to which machines of this class are subject. Since the introduction of this machinery in our mines they have in several instances made unprecedented progress in working rock, so that the machinery gives satisfaction. In September last they made with these drills in the Sutro Tunnel an advance of 310 feet in one month, which, in a tunnel as large as this (10x14), was a result never before accomplished. At the Gold Run Tunnel, which is 12x9, they are running a branch tunnel 8x8, which is to be 1,000 feet long. In August last, with fifteen men at work, they made with this machinery 153 feet 6 inches, which itself is considered great work. These results speak for themselves, and of course where such rapid progress is made expenses are considerably reduced. The display made by this firm was an excellent one, the compressor and drills having been shown in operation. A large block of stone was placed in a suitable position upon which the drills were set at work. The drills are all made on the same principle, and are mounted on various forms of carriage or holders for convenient application to the different requirements of rock-drilling and removal, in its numerous phases. The main elements of the drill are the cage, the cylinder and the piston. The cage is merely a trough, with ways on either side, in which the cylinder by means of a feed screw and an automatic feed lever, is moved forward as the drill cuts away the work. The piston moves back and forth in the cylinder, propelled and operated substantially like the piston of an ordinary steam engine, except that it is moved by compressed air instead of steam. The drill point is attached to the end of the piston, which is a solid bar of steel. The piston is rotated, as it moves back and forth, by ingenious and simple mechanism. The forward motion of the cylinder in the trough is regulated by an automatic feed, as the rock is cut away, the advance being more or less rapid, as, by the variation in the nature of the rock, the cutting is fast or slow. It will be seen that the drill point and solid steel piston alone receive the shock of the blow. When the cylinder has been forward the entire length of the feed-screw, it may be run back, and a larger drill point may be inserted in the end of the piston. By an ingenious peculiarity in the form of the cutting edge of the drill point, perfectly round holes are ensured. The regular rotation of the drill ensures the delivery of each blow at the point of greatest efficiency ; each wing of the drill point striking the rock at a point just far enough in advance of the cut of the preceding blow, to chip away the rock lying between. The yielding of the chip saves the edge of the drill point, and thus the advance of the drill point in the rock, without sharpening, is much greater than is possible in hand drilling, where the hole is formed by the crushing and pulverizing of the rock. The Jumper Drill drills 1 to 1½ inch holes and feeds 19 inches without changing drill points ; extreme length 3 feet 2½ inches, weight 220 pounds, and requires 1-horse power to run it. The Stoping Drill drills 1½ to 1¾ inch hole and feeds 20 inches without change, lengh 3 feet 2 inches ; extreme size on cross section 9x10 inches, weight 206 pounds, and requires 1½-horse power to run it. Mining Drill drills 1¼ to 2 inch holes; feeds 26 inches; extreme length 4 feet 7 inches, requires to run it 2½-horse power; weight 475 pounds. Tunnel Drill drills 1¼ to 2½ inch hole, and feeds 36 inches without changing drill points; extreme length 5 feet 7 inches; extreme size on cross section 13x9½ inches; requires to run it, equal to 3-horse power; weight 550 pounds. New York Drill drills 2 to 4 inch holes; feeds 44 inches; weighs 675 pounds, and requires 3½-horse power. The Canal Drill drills from 3 to 5 inch hole, feed 54 inches, requires 4-horse power, and weighs 1,000 pounds. The drilling machine is attached to a clamp by means of a circular plate, with a beveled edge cast upon the bottom of the cage near its center. This plate fits a corresponding cavity in one side of the clamp and is held there firmly in any required position by the tightening of a screw. The clamp is clasped about by a bar of iron, to which it may be held tightly by a screw. By the motions—upon one plane of the plate in its cavity, at a right

angle to the front of the clamp upon the bar, and the straining endwise of the clamp upon the bar—it will be seen at once that any position and direction of the drill is attainabie. It only remains to attach the bar, of any reasonable length, to a convenient frame or carriage, and the machine is ready for operation. In deep shafts and tunnels steam cannot be used as a motor, saying nothing of the difficulty of carrying steam without loss of pressure to any distance, the discharge of the exhaust in the heading would render working impossible. To meet this difficulty the use of compressed air was devised. This, as a motor, has all the essential properties of steam. In addltion it can be carried any distance without material loss of pressure, and when discharged from the machine furnishes to the workmen an abundant supply of fresh air. At the Hoosac Tunnel, with 7,150 feet of 8 inch air tube between the compressors and heading, with an average of six drills running, the average loss of pressure was only two pounds. The Burleigh Air Compressor consists of a steam engine connecting by means of a crank-shaft with two single-acting air pumps. The air, when compressed, is taken into a tank or a chamber, and there carried to any desired point in pipes, in the same manner that steam is carried. Connection between the permanent pipes and drills upon carriages, is made by a flexible rubber pipe, which is uncoupled when the carriage is run back for a blast. In this manner power is carried to a great distance at comparatively small expense. Four sizes of the compressor are made. No. 4 is arranged to give an air pressure of seventy-five pounds, with a steam pressure of forty pounds. These machines are now in use in nearly every State in the Union, and are fast superseding hand-drilling wherever any considerable amount of rock work is to be accomplished.

Hand Boring Rock Auger, exhibited by A. J. Doolittle, of Liberty Hlll, Nevada county : invented by R. A. Thomas, of Damascus, Placer county. The drill bores dry and clears itself to quite a depth. It is able to bore holes rapidly from two to three inches in diameter and six feet deep, at any desired angle, through ordinary slate, serpentine, sandstone, limestone, etc. It is cheap and simple in construction. One of these machines for a sluice-grade tunnel eight feet square, weighs about two hundred pounds, is all iron and steel, and can be set up by the aid of extension screws and put to work by an experienced operator in ten minutes; it can be thrown down ready for a blast in two minutes. It is operated by one man, or more, according to feed screw in which the auger is set. This machine is patented and improvements have been made by Mr. Doolittle. It is in use in several mines in this State.

CLASS 8.

MINING, STEAM, AND OTHER PUMPS.

Edward J. Delany, one Eclipse Pump in Tub, one Eclipse Pump in pieces. Improved lift, without piston or packing.

A. L. Fish, one Knowles' Patent Steam Pump, three Steam Pumps. These pumps have received many medals and diplomas.

J. M. Keeler, five Sluthour Pumps, one Sluthour Pump No. 1. The performance of this pump is extraordinary. It can be used for extinguishing fires, and as a ship, house, farm, or mining pump, or in any place where a pump is used. As a ship pump it is especially useful, since it is said never to choke with chips, shavings, corn or wheat, or anything not too large to choke the suction pipe. It does not require much power. The works of the pump are contained in a half-cylinder lying horizontal, the length and diame-

ter of which are equal. The suction pipe screws into a stem on the bottom of the cylinder, and directly over this opening is a bridge running lengthwise of the cylinder, dividing the same into two equal compartments, giving an entrance for the water to come in on each side. Over each entrance is an oblong valve, lying lengthwise in the cylinder. The bridge spoken of forms an air-tight partition, having a circular groove along the top, and the valve frame covering this half cylinder has two valves, corresponding to the valves below and directly over them, and the axle of the frame works in said groove. The outer edge of the frame coming next to the turned cylinder is packed so that when the valve frame is moved up and down or oscillated by the action of the lever a vacuum is formed alternately with the rushing of the water out of the opposite side, thereby forming a double-acting pump, giving out a steady stream with great force. This pump has been approved by the supervising inspectors of steam vessels of the United States, and by the Secretary of the Treasury, as appears by a circular, issued from the Treasury.

Treadwell & Co., one Gould's Boiler Pump, one large Blake Pump and Tank, one small Blake Pump and Boiler, one Treadwell Header, two Blake Steam Pumps, one Test Pump, one Ship Pump.

Goodwin, West & Co., one Steam Pump (Goodwin). Compact and strong, with iron frame. Can be run at very high speed, and delivers from three to four thousand gallons per hour.

One Hand Pump (Goodwin). Single-acting Lift and Force Pump, brass valves. Cylinder, 3½ inches in diameter. Cast in brass moulds, and ground with emery.

Two Bordwell Pumps, single-acting plunger pump. Valve in bottom of lower chamber, and in plunger. It is packed in the middle. Packing is protected from sand or grit, and will last indefinitely.

One Windmill Pump. Like the last, and adapted to windmills and horse-powers.

Goodwin, West & Co., Goodwin 21-inch Pump. Rotary pump, composed of outer and inner cylinders, the space between forming the chamber. Inner cylinder supported by friction rollers, revolving on an eccentric, so secured to the shaft that any wear on the cylinder can be taken up. Wear on the sides or ends is taken up by adjustable rings. Has but one valve, operated automatically by eccentrics on the pump shaft. It can be made to deliver from fifty to three thousand gallons per minute.

A. M. Jewell & Co., Wooden Pumps, made of the best redwood; the handles, rods and buckets of seasoned hardwood. The buckets are perfectly uniform, being made by machinery.

Linforth, Kellogg & Co., No. 6 Brass Force Pump, No. 1 Iron Force Pump, 2-inch Double Action, one Iron Rotary Pump, one Cistern Pump, brass, No. 2; one Cistern Pump, iron, No. 2; one Fountain Pump, iron, No. 2; one Pitcher Pump, iron, No. 3; one Ram Pump, iron, No. 3.

W. C. Wilcox, one Steam Engine Pump. Practical machinists give their approval to this pump. The special advantages claimed by the inventor may be stated in a few words, viz: This pump can be built for water works of any magnitude, for feeding boilers for high or low pressure steamers, and for tank purposes for the use of residences. The inventor will contract to build to throw the water to any height required. Guarantee given in every instance, and to responsible parties the pump will be delivered with the stipulation on the part of the inventor that if it does not perform according to representation, the sale shall be void.

W. T. Garratt, Hooker's Direct Acting Steam Pump. Hooker's Direct Acting Steam Pump Engines belong to that class in which the distribution valve is operated by the direct action of the steam upon pistons connected to it, without any direct connection to the main piston of the engine, or a crank shaft. The means taken to secure this end are exceedingly simple, and all the mechanism is completely protected from danger from without, and secure from any chance of disarrangement. For celerity of action it is not surpassed, and it has been repeatedly demonstrated that it can, for this reason,

pump more water in the same time, than any other steam pump that is manufactured. The great objection to the quick running of steam pumps of this class, is the liability of the pistons (particularly the valve piston) to strike against the cylinder heads, on account of the degree of compression necessary to be attained in order that the cushioning steam may have sufficient pressure to overcome the momentum of the quick moving pistons. In all other pumps the valve pistons are cushioned on the exhaust steam, which is nearly at atmospheric pressure, while in this one the steam at boiler pressure is by an ingenious device admitted behind the pistons in just sufficient quantity to fill the cushioning space, and then confined there as a spring to stop effectually the motion of the piston and balance the pressure of live steam behind it ready, at the same time to start it on its return stroke the instant that steam is exhausted by the supplemental valve from the other end. Thus it is seen, from the principles of its construction, why this pump should be able to make more strokes in a given space of time, and consequently do more work than any other steam pump. The mechanism by which the steam valve is operated is exceedingly simple in construction, and all leakage of steam about the valve motion is perfectly prevented, without the aid of stuffing boxes, thus ensuring that there shall always be only a fixed resistance to be overcome, and absolute certainty that no undue or excessive strain can possibly be put upon any part of the valve motion. The construction and operation of the engine is as follows: In the first place, it has the steam valve and its pistons by which the steam moves it, as is common to engines of the same class. Alongside of this main valve is a supplemental valve, which covers ports running to the ends of the steam cylinder for the supply of live steam direct to the main piston, before the main valve has uncovered its steam ports; and also steam and exhaust ports for distributing to the valve pistons. This supplemental valve is held by a notched bar, which lies in a slot covered by the flange of the valve chest, and reaches from end to end of the steam cylinder. At each end it bears against a cam, which is fastened on the end of a stem running down into the bore of the cylinder. So that there may be no leakage down into or up from the cylinder, the cam is made to set in a conical seat. It is thus perfectly free to turn, and is prevented from rising by the cover above. The bottom of its stem is turned up at right angles to form a tappet arm or wiper, which sticks in towards the piston; as the piston reaches the end of its stroke it engages against this arm and turns it into a recess in the cylinder head, so that if by any means it were possible for the piston to strike the head it could not strain the arm or its stem. The turning of this stem causes the bar of the supplemental valve to move in a direction contrary to the motion of the piston, reverses the supplemental valve, and by its contact with the cam at the other end throws the tappet around into the cylinder ready to be moved by the piston on its return stroke. By moving the supplemental valve, steam is supplied to force the steam piston in the contrary direction, though not in quantity to start it too suddenly because of the small size of the port by which the supplemental valve has supplied it. This catches the piston and holds it balanced, as it were, against the force of the column of water that the pump is lifting, ready to fly to the other end of the cylinder as soon as the main valve is reversed to give a full supply of steam, and also open the exhaust. The valve piston being (as before mentioned) similarly in balance by the compression of the live steam, starts, as soon as the supplemental valve has opened its exhaust, by the elasticity of the cushioned steam, and moves until it uncovers the port opening, leading from the supplemental valve, which it had closed when it cushioned on the live steam. It then receives its full supply of steam through the supplemental valve, and completes the reversing of the motion by throwing the main valve to exhaust and supply the main cylinder. As it passes to the end of its stroke, it covers the port through which steam is being exhausted, and just at the instant begins to supply live steam behind itself, and immediately cuts off the supply again and cushions ready for the return stroke. The main piston passes under full supply of steam towards the end

of its stroke, and just as it is about touching the tappet, covers the port by which steam is exhausting, and begins to cushion on the confined steam preparatory to the reception of steam from the supplemental valve. The actions of this pump, as is seen from the above description, are positive, and the main and supplemental valves are always in position to cause the steam, when turned on by the throttle valve, to give motion to the main piston, which motion, however slow it may be, is sure to cause a reversal of the valves at the right time and continue the movements of the piston. This pump is at work under all conditions and circumstances, giving perfect satisfaction, and has established itself as the only pump that can be driven at a high speed against a vacuum, as when used as a circulating pump for surface condensers. These pumps are manufactured in all styles by W. T. Garratt, corner Fremont and Natoma streets, San Francisco, under patents issued to W. D. Hooker, of which patents Mr. Garratt is proprietor for the Pacific Coast. George H. Corliss, the builder of the celebrated Corliss Engine, also manufactures them at his works in Providence, Rhode Island.

CLASS 9.

METAL WORKING—IRON ROLLING MACHINERY, STEAM HAMMERS, PORTABLE FORGES, DRAWING DIES, TURNING LATHES, SHAPING AND PLANING MACHINES, SCREW CUTTING AND GEAR CUTTING AND NUT PUNCHING MACHINES, VISES.

J. M. Keeler. The Chase Pipe-Cutting Machine is for the purpose of cutting and threading gas and other pipes, and bolts from ⅛ to 2 inches diameter. It is portable, weighs 100 pounds, and occupies a space of about 15x17 inches square. It is constructed in the best manner, of cast steel and malleable iron; the gearing is all cut, and all the parts are interchangeable. It will be found of great importance in gas, steam and all other kinds of pipe fitting, in cutting and threading pipes, making nipples, threading bolts and nuts, and in cutting off bolts to any required length. The splitting of pipe is entirely avoided, and a thread can be put on a pipe as large as two inches, with perfect ease. It cuts and threads and makes nipples for all sizes of pipes, from ⅛ in. to 2 inches. The manner of cutting leaves the pipe smooth, with no bevel outside or inside (to be filed off for putting on the die, or to diminish the diameter), and allows two cut ends to fit closely, thus making a perfectly tight joint.

D. A. Faulkner, two Patent Punching Machines, combined.

Conroy, O'Connor & Co., seven Portable Forges.

C. F. Marwedel, one Gear Cutter and Milling Machine. Combines simplicity of construction with all movements for level, mitre and straight gear, by means of a split nut and rack and pinion feed. Can be moved fast or slowly, and its vise attachment to cross feed gives all the advantages of a milling machine.

Treadwell & Co., one Bolt Cutting Machine, two Cupola Blowers, one Adjustable Crane and Ratchet Drill.

Wm. Manson, Atmospheric Power Hammer. It is the invention of Mr. Wm. Manson of Downieville, Patented June 23d, 1874. It consists of a cylinder, in which works a piston and piston rod connected directly with the hammer. The working cylinder is of long stroke and small diameter, and is connected with the condensing cylinder by open ports at each end. The condensing cylinder is of large diameter and short stroke, and its piston is

operated by a crank driven by a belt and pulley. The air is condensed alternately above and below the condensing piston, operating upon the working piston in the same manner, above and below alternately. The length and force of the blow are regulated by a stop cock between the two cylinders, and operated by a hand lever. It can at pleasure strike any desired length of blow, from one-eighth of an inch up to three feet. There are, also, in connection with the same condensing cylinder, small portable hammers, connected with three-quarter rubber hose of any required length, which can be carried about in the hand, and applied to riveting, caulking, stone cutting, etc. The principal advantages over all other hammers are, economy of power, durability, cheapness of construction and facility of application. The same patent covers a rock drill, so light and compact that a man may carry it about in his hand, and apply it in any direction. The drill is very effective; will penetrate hard granite at the rate of one inch in two minutes, as demonstrated at the Pavilion.

G. A. Raymond, two Patent Expansion Boring Tools, C. Varnhagen & Co.'s patent. The tool consists of a slotted hub, into which is screwed a tapering shank for attachment to the spindle. Into the slot of the hub is fitted the inner end of an arm, and through the latter, as well as through the hub, passes a tapering pin. A screw or worm fits snugly, but so as to turn freely in the slot of the hub, and the thread of this worm is adapted to the teeth of a segment of a worm wheel formed on the arm, and arranged concentrically with the tapering pin on which the worm rotates, so that on turning the worm, which in the present instance can be done by a square tool adapted to a square hole in the worm, the arm may be turned to any desired angle. Towards its outer end the forked hub is made slightly tapering to receive the tapering sleeve, against which bears another sleeve adapted to the cylindrical portion of the hub, and against the latter bears a nut on the threaded end of the hub. On tightening the nut, the tapering sleeve will be forced outwards, through the medium of the sleeve, and the two halves of the hub, which are slightly elastic, will be forced towards each other, thereby firmly gripping the arm.

One Patent Portable Self-feeding Hand Drill, C. Varnhagen & Co.'s patent. This will drill up to 1⅛ inches in wrought iron; the spindle has 3 inches feed, rapid hand movement by screw, bored at base to admit standard drills and sockets; the post has 22 inches vertical adjustment; the arm of the drill moves in and out 7 inches; with one setting, a surface of 27 inches outside, and 16 inches inside diameter, can be drilled; the spindle can be set at any angle, or parallel with base; the hand crank has a slotted arm for adjusting handle for drilling various sized holes. All steel, and a self-feeding adjustment. It is very strong and rapid.

CLASS 10.

HAND TOOLS OF ALL KINDS USED IN THE MECHANIC ARTS.

Joseph Ridgeway, two parcels of Mill Picks. These are well-tempered and finished.

T. E. Morgan, three Hammers in glass case.

John P. Tiernay, one Mitre Box. A well made box.

J. M. Donaldson, one Spring-eyed Needle.

C. F. Marwedel, case Mechanics' Hand Tools and Twist Drills ; case Moulders' Tools. Very handsome tools, of excellent metal, and finely finished.

M. C. Hawley & Co., three Flutes, two Giant Nail Pullers, one Toilet Iron.

Linforth, Kellogg & Co., one Card Powell Tool Co.'s Edge Tools, one Card Black Diamond Files. These were superior specimens.

Osborn & Alexander, Mechanics' Tools. Good steel and well made. Patent Iron Mitre Box.

J. J. Thiesen, one improved Mitre Box.

Charles Poormaster, one improved Wrench.

Pacific Edge-Tool Works. These works manufacture cast steel edge tools for ship and house carpenters, caulkers, coopers, butchers, etc. Furnished with all the necessary machinery, and using only the very best English steel, this firm is able to supply goods equal to any in the market, and their display was a great surprise to competent judges in this line.

A. J. Doolittle, Liberty Hill, Nevada county, Hand Rock-boring Auger, invented by R. A. Thomas. This drill, it is claimed, saves about one-half the expense of blasting attending the use of the ordinary hand-drill. One of these augers for a sluice-grade tunnel, eight feet square, weighs about two hundred pounds, and is all iron and steel. It can be set up by the aid of extension screws, and put to work in ten minutes, and can be thrown down, ready for a blast, in two minutes. It can be worked by one man or more, according to the feed screw in which the auger is set.

CLASS 11.

WOOD WORKING, SAWS, SAW MILLS, PLANING MACHINES, MORTISING, TENONING, SCROLL SAWING, AND OTHER MACHINES, TURNING LATHES.

In this class there were thirteen exhibitors, each of whom deserves credit for the character of his display, while there was hardly anything to call for very marked notice. Most of the machines, ingenious and well designed as they were, were already familiar to the public, and accepted as complete in their special lines.

R. W. Brehm, a Wood Turning Lathe. This is a perfect piece of workmanship.

Valentine & Covert, a Shingle Machine, excellent and economical. It is built with a double carriage, and fed at both ends, by which arrangement the saw is made to cut on both sides. The work is delivered at each end.

C. F. Marwedel, a Foot Lathe.

M. Hanson, a Jig Saw, neat and handy for small work. This saw has an adjustable table, which can be tipped either sidewise or endwise.

F. A. Huntington, a Shingle Machine, constructed with a single upright carriage. It delivers its work to the operator, who stands between it and the edger, and he is therefore able to work with great rapidity.

Pacific Saw Manufacturing Company, a beautiful display of admirably finished Saws of every variety and form.

N. W. Spaulding, Circular Saws, with patent inserted teeth, and Saw Teeth. These are the invention of Mr. Spaulding, and have gained a most enviable reputation.

Conroy, O'Connor & Co., a Pony Planing Machine. Neat, compact and efficient.

A. Potter, Patent Self-feeding Gang Edger. This edger will take lumber from three to thirty-six inches in width, with a thickness of from one-half to six inches. It has four saws—the two centre ones readily adjustable while in motion by a crank at the front of the machine, where a lever is also fixed to adjust the feeders to the varying thicknesses of the lumber which is being

dressed. The operator has no occasion to leave his position to adjust either of the saws or the feeders. The lath mill is supplied with an attachment, by the use of which only that portion of the bolt to be converted into laths is cut, which will admit of being worked up into perfect strips.

O. Bonny, Jr., a Band Saw.

Treadwell & Co., a Small Wooden Lathe.

F. A. Huntington & Co., a Saw Mill.

J. H. Small, a Planer.

W. P. Valentine, a Double-headed Shingle Pointer.

CLASS 12.

AGRICULTURE.—PLOWS, HARROWS, SEEDERS, HARVESTERS, THRESHERS, HAY PRESSES, SHELLING MACHINES, HAY CUTTERS, CIDER MILLS, WINE PRESSES, AGRICULTURAL TOOLS AND IMPLEMENTS.

Sweepstake Plow Company, of San Leandro. Plows of their manufacture. These plows are of various styles, light and heavy, and for simplicity and efficiency vie with any we have seen.

Baker & Hamilton, Hoes, Forks and Rakes (forty-six pieces).

O. Bonny, Jr., Hay Rake and Grain Lifters.

Kimball Manufacturing Company, three Harrows and two Scrapers. The California Harrow is so arranged that the driver, who is seated on the center section, by raising or lowering the wings, sets the teeth of the harrow into the ground, or lifts them completely clear, so that he can drive on the road, and can work up to and around trees, without changing the course of the team.

Linforth, Kellogg & Co., four Gang Plows, fourteen Clipper Plows, one Russell Reaper, three Mowers and two Steel Harrows, Churn, Horse-Rake, Harrow, Hand Barrows, and Lawn Mowers, Garden City Gang Plows. The draft of this plow is directly from the end of the beam. All side and downward strain upon the horse's neck is obviated. The plows can be raised or lowered independently of each other, and the depth of plowing can be changed instantly without stopping the horses.

Napa Three-Wheel Gang Plow. This has a castor wheel, in the rear, so that all drag is avoided and unnecessary wear of the share and landside prevented. It is adjustable, the draft being made to do the work of raising and lowering with no more care on the driver's part than that of throwing the lever out of gear. The plow can easily be turned in its own length.

Napa Plow Company's Vineyard Plow. This has been found to be the best of all plows for use among vines.

A. M. Caswell, one Gopher Trap,

Myron Angell, Post Hole Digger.

J. H. Gove, Bale of Hay, Compress Model, Box Press Model.

Price Press Company, one Hay Press.

Keller & Co., Gorham Seeder and Cultivator.

E. S. Whitcomb, one Mower and one Reaper.

M. C. Hawley & Co., new model of Buckeye Mower, Buckeye Harvester, Hutchinson Cider Press, Buckeye Cider Press and Mill, Haines' Header. The woodwork of these headers is thoroughly seasoned maple, ash and hickory. This machine has iron wheels, with adjustable spokes, and is the only header bearing the patent adjustable reel-guide or steering wheel.

Treadwell & Co., Gang Plow, Power Hay Cutters, Seed Drills, Corn Shellers, Horse Rake, Lawn Mower, Pacific Fan Mill, Cahoon Seed Sower etc. The "Treadwell Gang Plow" is made on entirely new principles, hav-

ing wheels four and a half feet in height, and no cumbersome crank axles, both wheels running on the unplowed land while in use. The depth of the furrow is regulated by means of bolts connecting the share with the beam; and in lifting the plow out of the furrow altogether, the driver has only to apply about ten pounds pressure to the upright lever in front of his seat. The Ætna Mower and Reaper is remarkable for these points: the double motion, the self-rake, the adjustment of the bar, and the portability of the machine.

Schœnstein & Klein, Grape Crusher and Stemmer. This invention is an improvement in that class of grape crushers and stemmers in which beaters are revolved inside of a box or case, the lower portion of which is formed of parallel slats. In this class of machines, as ordinarily made, the grapes are crushed in separate charges, and the stems thrown out of the case after the grapes are crushed, by opening one side of the case, so as to permit the revolving arm to throw them out. The improvement in this machine consists in a peculiar construction of the case and revolving beaters, by which the grapes can be continuously fed into the machine at one end, while the stems are automatically discharged from it at the other end. With one of these machines nine tons of grapes have been crushed and the stems automatically discharged in a thoroughly separated condition without the necessity of stopping or varying the operation of the machine. Two sizes are made, one weighing 350 pounds, which will crush and stem from ten to fifteen tons per day, with one horse, and more in proportion with two horses. The other size weighs 1,300 pounds, and will crush sixty tons per day of ten hours, if driven at the rate of 175 or 200 revolutions per minute, with one man to feed, and another to take away the stems.

Baker & Hamilton, Wheat and Corn Mill, Hay Cutters, Lawn Mowers, Cider Mills, Baxter Engine, Elliptic Water Wheel, Bear Trap, one Plow, Needle Oiler, Threshing Machine and Engine, etc., etc.

J. M. Keeler & Co., Fruit Drier and Furnace.

F. M. Wade, Egg-carrier.

J. M. Donaldson, Grain Sieve, Gate Catch.

Huston & Probasco, Patent Egg-carrier.

H. W. Dalton, Rotating Harrow. It is connected with trucks, and may be run with either two or four wheels. A seat is provided for the driver. There are two levers within his reach whereby he can raise either one or both ends. It is appropriately styled a soil-stirrer and lifter, pulverizer and harrow, and it certainly must be all of these combined, from the manner in which its peculiar construction forces it to act. It is particularly well adapted for hard ground and stubble fields. The teeth, from the revolving motion of the cylinder in which they are fixed, both strike and pierce the clods and earth to the depth of their length, and the forward motion of the whole causes the teeth in their upward motion to free themselves from stubble and other rubbish.

J. T. Woolsey, Steam Cheese Vat and Steam Heater. This does away with the direct use of fire for heating the vat. The sides of the vat are hollow, and the steam is introduced through a hose and nozzle to a main pipe, running through the bottom on the inside of the vat, and is then distributed by means of branch pipes, which are so curved as to produce a uniform current of heat. The heater is portable, and may be kept in a separate room. The steam generated is easily controlled by means of two stop-cocks on the top, and may be distributed through a hose. When not required for use, the steam is turned into the supply tank.

O. Du Bois, one Mower, Mowing Machine Model. This mowing machine was patented in April, 1873, At the end of the cutter bar is an ingenious contrivance for cutting lodged grain and grass—the one on the mower being for standing grain.

W. S. Gore, Oliphant Rotary Churn.

W. S. Plummer, Plum Pitting Machine. This invention, made but two months ago, is exceedingly simple and effective. The machine will do the

work of ten men in pitting plums or other stone-fruit. It has been adopted by the Alden Company.

Kimball Manufacturing Company, Eagle Hay Press. Strong, cheap, simple to manage; any mechanic can make repairs with little delay and small cost. Its great power adapts it to pressing hides, rags, cotton or moss.

CLASS 13.

STEAM PLOWS AND CULTIVATORS, SUGAR MILLS (BEET AND SORGHUM), MACHINES FOR BREAKING FLAX, RAMIE, ETC.

H. C. Shaw, one Gang Plow, Cultivator and Reaper combined; Webster's improved Chisel Cultivator, works admirably.

M. C. Hawley & Co., seven Plows and a Walking Cultivator.

Conroy, O'Connor & Co., Meat Cutter.

Walter A. Wood, two "Wood" Mowers.

Treadwell & Co., two Cultivators, Russell Separator, Patent End-shake and Shoe.

P. J. McDonald, model of a Steam Plow. This plow combines the Fowler or English system and the American system of traction. On this principle the weight has nothing to do with the draft, as one plow braces against the other, while drawn towards one another nearly at right angles, the machine remaining stationary; when the plows are drawn back clear of the ground, the machine is moved on other land, and placed in a proper position to make the next cut.

George Miller, Washington Territory, Cottage Bee Hive.

D. McKenzie, one Harrow.

Baker & Hamilton, five Plows.

CLASS 14.

MACHINERY OF VARIOUS MANUFACTURES, INCLUDING PAPER MAKING, PAPER RULING, WEAVING, SPINNING, ROPE MAKING, PRINTING, STAMPING, TYPE MAKING AND TYPE SETTING, AND OTHER MACHINERY AND APPLIANCES NOT PREVIOUSLY CLASSIFIED.

There were but few entries in this class, and none of them were new inventions.

Dewey & Co. exhibited a printing press in full operation, and an assortment of type and printing material. The press, on which the *Daily Fair Press* was printed, was an object of attention to a great many, presumably not familiar with the operation of printing.

Charles E. Barnes exhibited a Braiding Machine, which worked well, braiding a perfectly round cord, which may be composed of any number of strands or smaller cords. The cord is so closely woven that it will not ravel or untwist half an inch after being cut in twain, while the breaking of a strand, or even of several at different points, has very little effect in weakening the strength of the rope.

P. Merrill, a Carpet Beater, or working model of one; very effective and thorough.

Leffel & Meyers, a Smutter.

Baker & Hamilton, four Coffee Mills.

Linforth, Kellogg & Co., one Coffee Mill.

Treadwell & Co., two Coffee Mills.

San Francisco *Chronicle*, Stereotyped Plates, finished and unfinished; two Matrices, and two copies of the *Chronicle*, printed.

M. Gray, a Music Printing Press.

J. C. Miers, Machine to measure Cloth.

A. Viannay, a Silk Loom, for weaving dress silks. The thread silk is imported, and the stuff manufactured here. Mr. Viannay is the pioneer in this branch of industry, and it is to be hoped he will succeed in giving to it a large development.

CLASS 15.

SEWING MACHINES, KNITTING AND BUTTON-HOLE MACHINES.

Davis Sewing Machine Company, nine Sewing Machines.

W. B. Higgins, nine Sewing Machines and four Chairs.

E. W. Davis, six Sewing Machines.

Samuel Hill, nine Sewing Machines.

Kent & Carter, Hall's Patent Sewing Machine Treadle.

G. A. Norton, Wilson's Sewing Machines.

CLASS 16.

PHILOSOPHICAL—SEXTANTS, QUADRANTS, SURVEYORS' INSTRUMENTS, CALCULATING MACHINES, SCALES, ASTRONOMICAL INSTRUMENTS, ELECTRIC MACHINES, TELEGRAPH APPARATUS, WATCHES AND CLOCKS.

J. C. Huguenin, three Movement Watches, one Gold Case, etc.

Dr. B. J. Smith, Adjustable Horse Shoe Magnets.

Mrs. P. Quigley, one case Spirit Levels. Well made and finished.

Baker & Hamilton, Patent Watchman's Clock.

John Roach, Mathematical and Optical Instruments. Mr. Roach's instruments have a well earned reputation for accuracy and thorough workmanship.

C. F. Marwedel, Electrical Annunciator.

Electrical Construction and Maintenance Company, Telegraphic Instruments.

Nye & Acheson, Clock and Figures.

Fairbanks & Hutchinson, Fairbank's Scales.

Wenzel & Hartmann, 324 Kearny street, Pneumatic Clocks. By this invention any number of clocks in a building can be made to show uniform regulator time. A regulator with long pendulum and weight is set up in a build-

ing, in a convenient place (out of sight), and a system of pipes, similar to those used for gas, is connected with this, and carried to any number of clock faces in the different rooms of the house. A simple air pump is attached to this regulator, and so connected with the pipes, that by the motion of the clock, a slight pressure of air is forced through them, and raises a lever, which acts on a ratchet wheel connected with the hand wheels and dials (no clockworks are required for these), and causes all the minute hands to move one minute at a time. This goes on regularly every minute. In a word, the time is telegraphed from the central clock to the different dials throughout the house. The air pump takes in fresh air every minute, and atmospheric changes do not interfere in any way with the working of the clock.

V. S. W. Parkhurst, 318 Pine street, U. S. Standard Scales. Exhibited at the exhibition of the Mechanics' Institute, 1874. These goods are manufactured by the Brandon Manufacturing Company at Brandon, Vermont. Hon. N. T. Sprague is President of the Company, and W. W. Reynolds, Superintendent. One Dormant Scale, 3,500 lbs., two iron pillars—during the Exhibition 32,000 persons were weighed on this scale; one Wool Scale, with graduated counterpoise; one Portable Scale, brass trimmings, the wood work made of California Laurel, highly polished; five Portable Scales, including those with patent drop lever; one Army Scale, 1,200 lbs.; this scale closes up and is compact of form; twelve Patent Balances; fourteen different kinds of Counter Scales, all of Howe's patent. Exhibited by V. S. W. Parkhurst, Agent for the Pacific Coast, 318 Pine street, San Francisco.

Scales manufactured by Landers, Feary & Clark, New Britain, Conn. Five assorted sizes of Turnbull's Counter Scales; two Turnbull's Family Scales; twenty-seven assorted Spring Balances, with and without pans, for household and business uses.

CLASS 17.

DENTAL WORK AND MACHINES, SURGICAL MACHINES AND APPLIANCES, TRUSSES AND ORTHOPEDICAL APPLIANCES OF ALL KINDS.

Dr. J. B. Beers, case Gold Crowned Dentistry.
Dr. B. F. Lyford, Apparatus for Embalming.
John Roach, Lung Tester.
D. S. Hutchinson, Specimens Mechanical Dentistry.
C. Dieterlich, Trusses, Supporters, etc.

CLASS 18.

MANUFACTURES IN METALS—INCLUDING PIG, BAR AND ROLLED IRON, PLAIN AND ORNAMENTAL CASTING, STOVES, CRUDE STATUARY IN IRON AND BRONZE, WROUGHT IRON WORK, SHEET IRON WORK, CARRIAGE SMITH WORK.

Adam Folrath, Case Hand-made Horseshoes.

Thos. McKibbin, Iron Wheelbarrows. This improvement gives less weight on the hands, by placing the wheel under the tray, which has often been experimented upon, but the difficulty has been to overcome the side or lateral

sway. The principle of this Barrow has entirely overcome that objection, as it shows. The load in the back part of the tray falls below the level of the hands, which counterpoises that above the wheel.

John Nicholson, Mill Horseshoes.

Bryant & Taylor, Safes and Vault Doors—massive and admirable.

J. De La Montanya, Stoves, Ranges, Heaters. This assortment is large and varied.

Wm. Friel, Vapor Stoves.

C. & B. Watkins, Hand-made Horse Nails and San Francisco Cable Chains. These are very solid and well made.

William Wehmoller, corrugated Stove-pipe Elbows. The style of make gives great strength to these.

Brittan, Holbrook & Co., Stoves, Ranges and Heaters, Medallion, Peerless, and other justly celebrated ranges and stoves.

A. Sornin, Gas Stoves. A French invention, and highly commendable.

Hall Safe & Lock Company, Safes and Locks. A splendid assortment of Bankers' and Commercial Safes, with most simple and ingenious locks and fastenings.

G. A. Raymond, Safes and Vault Doors. These were also very finely made.

J. T. Milliken, Marbleized Iron Mantels and Grates. Very fine specimens, rivaling the marble in beauty.

G. A. Potter, Cooking Utensils.

Thomas Day, Bronzed and Crystal Chandeliers.

John Payne & Bro.'s, Bolts and Nuts.

Kent & Carter, Stove Lifter and Iron Dishcloth.

Nye & Acheson, two Bronze Figures.

P. J. Philips, Gas Lamps and Stoves.

Byron Jennings, San José, Corrugated Steam Water Pipe.

R. F. Osborn & Co., Cabinet Hardware.

W. S. Ray, six Ship Cabooses, Chimney-tops and Buckets.

F. H. Merrill, Stove-cover, Pipe and Tongs.

H. J. Booth & Co., twenty-seven pieces Screws.

Treadwell & Co., one Blower, No. 7.

W. T. Garratt, Root's Patent Blower.

G. A. Potter, Marbleized Iron Mantels.

J. M. Keeler, two Castings.

Cast Steel Shoe and Die Company, four pieces Castings and Hammer. The manufacture of these shoes and dies has worked a revolution in quartz mining. The following extracts will give some idea of the advantage offered by this invention :

"The Cast Steel Shoe and Die Company, of this city, have just received through the *Mining and Scientific Press* Patent Agency a patent on the application of cast steel to the manufacture of shoes and dies for quartz mills. This valuable invention was thought of about two years ago, by Mr. J. G. Kittredge, who is a well-known iron and steel worker of this city, and who has since been quietly experimenting and laying his plans to fully perfect and bring the shoe and die into use. Numerous plans have been tried to crush ore by other methods than the old style of cast iron shoes and dies, for the purpose of lessening the expenses, each battery of five stamps wearing out about 1,000 pounds of cast iron every thirty days. Nothing has been found an improvement upon the iron shoes and dies, until the application of steel to the same articles was hit upon. The Cast Steel Shoe and Die Company was formed last year for the purpose of manufacturing and supplying quartz mills with these steel shoes and dies, and after many experiments in the methods of casting, forging and tempering the steel, they have succeeded in producing shoes and dies that they affirm will do the work of six sets of cast iron, costing about half the amount. The Company now guarantee the steel shoes and dies in all cases to do the work of four sets of iron, and save at least ten per cent. on the cost. In some of the Crown Point Company's mills, and at other mills where they have been experimenting, they have been found

superior in every way to iron. First there is a saving in freight of about seventy-five per cent., then a saving of time in changing and setting up the shoes and dies, and of time lost by frequent breakages of the iron. It is estimated that each battery of five steel shoes will crush at least a ton per day more rock than iron, as the steel wears uniformly and always presents a flat striking surface, while the iron wears hollow and uneven in the center of the shoes and dies. In crushing gold rock, the Company are assured by mill men that the steel are cheaper than iron at no cost at all, as the presence of the iron dust and chippings in the amalgam deteriorates from the value enough to more than pay the cost of steel, as by wearing so slowly the amalgam is not materially affected by the chippings. The steel shoes may be worn down to within an inch of the stem, much closer than the iron, without fear of breaking; the refuse steel may be used for pointing picks, facing hammers, and other purposes.

EMPIRE CITY, Nevada, July 7th, 1874.

Cast Steel Shoe and Die Company, San Francisco:

GENTLEMEN: In reply to yours, regarding steel shoes and dies, I have to say, that I put those sent me in five of the eight mortars of this mill on the first day of April last, so that they have been in constant use ninety-one days up to July 1st, and they will last through July at least, making in all one hundred and twenty-two days. The best iron lasts from thirty to thirty-five days, and costs five and three-quarters cents per pound. With steel the tappets only have to be set once a month, and with iron they must be set once a week. Steel wears more evenly, does not chip off like iron, and for this reason and the one stated above, I estimate that a forty stamp mill will crush, with steel shoes and dies, five tons more every twenty-four hours than iron. Inclosed please find drawing for square die. You will please send me forty shoes and twenty-five dies, same as last, and fifteen dies with square base, as per drawing. Yours truly,

JOHN HANSEN,
Superintendent Morgan Mill.

Forty shoes and dies, of steel, for the Morgan Mill, weighing 10,900 pounds, at twenty cents cost	$2,180 00
These will outwear four sets of iron at five and three-quarter cents, costing	2,507 00
Gain in favor of steel (fifteen per cent.)	327 00
Extra profit on five tons more ore crushed per day, at $12 per ton for one hundred and twenty-two days	7,320 00
Total amount in favor of each set of forty steel shoes and dies	$7,647 00

The extra amount of ore crushed with steel shoes and dies will pay for three and one-half sets of steel or fourteen sets of iron at this mill. The steel are cheaper than iron, if the latter are furnished gratis.

Huntington, Hopkins & Co., Chrome Steel. This steel is an alloy of two metals—iron and chromium—and besides being far in advance of anything hitherto known for strength, durability, elasticity and uniformity, it possesses some features exclusively its own. It has been applied to almost every purpose known to mechanical art, and has uniformly proved a superior article. The steel, being an alloy, is capable of being graded for any special purposes. It can be made so hard that you cannot soften it, and so soft that you cannot harden it. One grade is made for turning and planing tools; another for taps, dies and punches; and another for cold chisels, rock drills and tools for rock work, etc. It is not injured by being heated to a very high heat. If heated to nearly a white heat, and allowed to cool gradually, it is the same as it was before being put in the fire. Two grades of this steel will weld like wrought iron. The only way the steel can be spoiled is by being dipped in

water or hardening mixture at too high heat, and even then it can be restored by being reheated and dipped at the proper heat. The steel for the spans of that great engineering work—the St. Louis bridge—is made by this chrome process. This chrome cast steel has a tensile strength far exceeding that of any other. In a series of experiments, the highest tensile strain obtained was 198,970 pounds to the square inch ; the average result of twelve specimens was 179,980 pounds, whilst the highest strength of steel given in Percy's Metallurgy, page 870, is 132,909 pounds per square inch. One grade of this steel, called Adamantine, when forged into a tool and allowed to cool gradually, is too hard to be worked with a file. "Gun steel" can be worked almost as easily as wrought iron when hot.

CLASS 19.

LOCKSMITH WORK, CUTLERY, Etc.

L. M. Henry, pair Patent Skates.
Charles Otto, Hardware, own and imported.
Sutter & Scheerer, Wire, Spiral, Door and Gate Spring.
Michael White, Improved Double Butt Hinge.
Nathan Joseph, Case of Cutlery.
Warren Holt, Doors and Gates with self-closing Hinges.
A. D. Hatch, Wendell's Door Stop and Fastener.
Huntington, Hopkins & Co., Hardware.
Will & Finck, Cutlery, Bar Tools, and Bell Hanging Material. Admirable goods.

CLASS 20.

BRASS, TIN, LEAD AND COMPOSITE CASTINGS, BRASS FINISHERS' WORK, COPPER STILL WORMS, PIPES AND GENERAL WORK, LEAD PIPE, SHEET LEAD, SHOT, PLUMBING, GAS FITTINGS, TIN WARE, WIRE WORK, OTHER THAN IN CLASS 53.

W. Carpenter, Brass Castings.
Peter Abrahamson, Portable Cooking Dishes and Stove. Can be carried in a basket. Suitable for hunters.
F. Schoener, Saloon Kettles and Metal Goods.
Brittan, Holbrook & Co., Copper, Tin, and Japanned Ware.
Weed & Kingwell, Brass Goods (California Brass Works), and large Bell.
C. C. Allen, Bird, Squirrel, and Mouse Cages.
Pacific Wire Manufacturing Company, Wire of every description; own manufacture.
Thomas H. Selby & Co., Lead and Block Tin Pipe, Shot, Balls and Lead.
Paul Lotz, Fancy Bird Cage.
Crawford & Hinckley, Bed and Furniture Springs.
H. F. Marsh, three Tuft's Soda Apparatus.
G. W. De Groot, Canary Breeding Cage.
A. S. Hallidie, Coils Wire Rope, galvanized and ungalvanized.

A. S. Hallidie, Steel and Iron Wire.

W. T. Garratt, Brass Goods, Garratt Metal Bells, Pig, Copper, Safety Valves, Pumps, and Blowers, etc. An admirable display of every kind of finished brass goods.

Le Noir, anti-friction Babbitt Metal. This is warranted to equal the best Babbitt metal at one-third the cost.

Frank Spinning, Patent Coal Oil Faucet.

George Manning, Plumber's Shower Bath.

Linforth, Kellogg & Co., Steel Amalgam Bells.

Nye & Acheson, Chandeliers.

E. L. Bushnell, Chair Cushion Springs.

J. M. Eckfeldt & Co., Wire Goods.

CLASS 21.

ELECTRO-PLATING, ELECTROTYPES, STEREOTYPES, Etc.

There were five entries in this class. The work in plated ware was of singular uniform excellence, displaying taste and thorough workmanship, so far as could be judged.

S. L. Hasey, an assortment of Table Ware, Fruit Stands, Cups and Goblets, Toilet Articles, etc., both frosted and polished.

San Francisco Plating Works. A collection of old ware replated was very handsome. Pieces for table service, Forks, Pistols, Door Plates, Lamps and a great variety of other articles filled their cases.

R. F. Osborn & Co., an assortment of Carriage and Harness Mountings in gold and silver.

Chas. DeYoung & Co., a very interesting exhibit of Stereotype Plates of the *San Francisco Chronicle*, showing the matrix, the unfinished plate, and the finished.

Wm. E. Shepman, a small case of elegantly finished Plated Ware.

CLASS 22.

MANUFACTURES IN WOOD, INCLUDING SAWED LUMBER AND TIMBER, HOUSE CARPENTERS' AND JOINERS' WORK, SCROLLING, TURNING AND MOULDING.

Ellsworth & Washburn, Newel Posts. The wood close-grained; posts of a beautiful form and remarkable for size, being fully ten inches in diameter. The trees from which these posts were made grew to these dimensions in thirteen years, from seed planted in the Court House yard at Stockton.

J. M. Keeler, a Hitching Post.

Sanborn & Byrnes, Newel Posts, made of Walnut, Rosewood and Laurel, some of them terminating in bronze candelabra—designs beautiful.

A. M. Jewell & Co., Hard Wood Veneering, showing with what facility the different varieties of native woods may be manufactured into the thinnest veneers. A worthy exhibit.

H. B. Smith, Sacramento, Ladders and Step-ladders constructed of wood and wire rods, and tipped with iron. They show a convex or arched front. Made upon thorough mechanical principles, these ladders are light, strong and durable.

San Francisco Last Manufactory, Boot and Shoe Lasts, well made.

Walter Freeman, Policeman's Baton.

R. W. Brehm, Wooden Sleeve Buttons. An ingenious method of utilizing our beautiful native woods, by turning such fancy articles as Sleeve Buttons, Vases, etc. A meritorious exhibit.

Frederick Weinoel, carved Wooden Mantels. Very good work and design.

G. P. Clouth, Sash Operator and Fastener. A simple and ingenious contrivance.

CLASS 23.

CASKS, BARRELS, TUBS, PAILS, KEGS, WOOD AND WILLOW WARE, BRUSHES.

There was a fair show in the articles of this class, and a good deal of interest attached to them as of home manufacture. In Brushes and Brooms especially there was evidence of an active and growing business; the work being uniformly of great excellence.

L. J. Beam, L. L. Palmer and Mrs. A. B. Wiggin, exhibited Washing Machines, all seemingly effective and compact.

California Cigar Box Company, Redwood Cigar Boxes, enough like the familiar Havana boxes to deceive even a practiced eye.

Wiester & Co., two Washing Machines and a Fluter, and a model of the Read Road Scraper, a machine for clearing up roads.

California Washing Machine Company, four Washing Machines, a Mangle, a Clothes Drier and three Clothes Horses. The Clothes Drier is a post, supporting four arms on which the lines (300 feet in length) are stretched. The post, which is about twelve feet high, is in two equal lengths of six feet each, the stationary portion forming a socket, in which the other moves up and down, as required, by the simple turning of a crank.

Gillespie & Gann, an assortment of well made Brooms and Brushes.

H. J. Sibley, Bartlett's Pails and Hering's Folding Ironing Table, very light and firm, and requiring not more than half the room of an ordinary kitchen table.

J. D. Smith, Washington, Yolo County, three combined Scrubber, Mop and Wringer. Ingenious and well made, though we are inclined to think that most housekeepers will continue to prefer the separate instruments.

Geo. H. Mixer exhibited an Iron Bung for barrels. A decided improvement, if not too costly. Instead of being driven into place by a mallet, this bung is screwed in, and may be withdrawn without violence.

Figer Brothers, a very full assortment of well made and handsone Brushes from the Pacific Brush Factory. We are glad to know that this enterprise is in a prosperous condition.

Schoenfeldt, Cohen & Co., Willow-ware in great variety and stoutly made.

Robinson, Fowler & Co., Brooms, with tin sockets for the handles, which may be removed when broken, and a new one inserted. An excellent inven-

tion for economical housekeepers. The Brooms and Brushes of these manufacturers are very well made.

Edwin Sutherland, a Steam Washer, very effective.

L. L. Palmer, Wringing and Washing Machine.

M. C. Hawley & Co., Mangles, Carpet Sweeper and four Clothes Wringers.

S. P. Connor, a huge Wine Cask, made for the cellar of a Sonoma vineyard. Very well finished work.

Hall's Willow Works, everything that is made in Willow Ware, and all of good quality.

Scott & Perry, four Premium Flour Safes. These safes have something the look of a small kitchen dresser. The top, when turned back, shows a kneading board; next below this is a drawer, and below that two rounded receptacles for flour, closed by a revolving cover. Apparently convenient, the safe hardly seems, on examination, to be fitted for practical use. The fixed sides and back of the kneading board must interfere with the free movement of the arms and the roller; and the box for flour is too near the floor, and too inconvenient to satisfy the housekeeper.

J. W. Freese, two Clothes Driers. Good and useful.

M. K. Barron, two Knock's Washing Machines.

August Knell, one Paper Basket.

Miss L. Bennett, Hanging Basket.

Miss A. Paulson, two Baskets.

Mrs. Watts, Lunch Basket.

W. W. Moses & Co., Basket Work. A fine assortment of home-made Baskets.

Harwood, Nichols & Co., Brooms with wooden sockets, on the same principle as those with the tin sockets already noticed. The articles seem to be very well made.

CLASS 24.

FURNITURE, TABLES, CHAIRS AND BEDSTEADS, BILLIARD TABLES AND FURNITURE.

The number of entries in this Department was quite large, and the articles all of a high degree of merit. The manufacturers, large and small, seemed to vie with each other in giving finish and beauty to their merchandise; and the visitor to the Fair could not but wonder at the labor and artistic skill lavished upon the bedsteads, tables and chairs which almost filled one side of the north gallery. The favorite wood with all the makers seemed to be the California laurel, and the treatment of this beautiful wood was in every way skillful. Alone, or in combination with other woods, it is a thoroughly elegant material for all cabinet and household finishing purposes. The Billiard Tables were uniformly of great elegance. It would be difficult to assign pre-eminence in this branch to any maker.

E. A. Turner, cast steel Furniture Springs.

Gilbert & Moore, School and Office Furniture, well and substantially made.

Jacob Strahle & Co., Tables, Stands, Bureaus, Bedsteads, Sideboards and an assortment of California woods. A very fine display.

D. C. Mitchell, a Portable Cradle.

E. Falkingham, Rocking Horses and Toy Carriages.

W. J. T. Palmer & Co., General and School Furniture. A beautiful display of finely finished work. The mantels, in polished laurel wood, were especially worthy of notice.

A. J. Folger & Co., seven bales of Excelsior, finely slivered wood for mattress stuffing.

Pacific United Workingmen's Furniture Manufacturing Company. Samples of Furniture in various styles. A large and most creditable exhibition of admirably made articles.

C. Schreiber & Co., handsome Bed-room Furniture.

Goodwin & Co. This was one of the largest exhibits of Furniture, all of good material and well made.

John Hoey, Sofa and Chamber Set.

Warren Holt, School Desks.

E. L. Bushnell, Spring Mattresses.

Samuel Beal, Spring Mattresses, Bolsters, etc.

C. W. Garland, three Gilmore Spring Beds, very light and firm.

John Behnke, Writing Desk.

W. H. Smith, Spring Beds, Mattresses, etc.

A. T. Sherwood & Co., Elastic Beds, Folding Cot and a Hospital Bed, easy and ingeniously arranged.

A. L. Bancroft & Co., Andrews & Co.'s School Furniture. Very simple and strong.

A. Jungbluth & Co., Pigeon-hole Table and Dressing Case.

Indianapolis Chair Manufacturing Company, and Udell's Ladder Company, Chairs, Step-ladders, Footstools, etc.

J. Campbell, Woven Wire Mattresses.

Trubner & Hoffman, two Show Cases.

William H. Kelly, Cribbage Boards, Work Boxes and Fancy Tables.

Warren & Silsby, Spring Beds and Spiral Bed Springs.

Peter Frauen, Cylinder Secretary and Writing Bureau, massive and rich.

John Stratman, Fancy Table.

Emanuel Castagnino, Tables, Secretaries, Bureaus, etc., of beautiful inlaid woods.

Rickoff & Clark, Spring Beds, combination double springs, firm and elastic.

A. Roman & Co., School Desks and Seats, of a compact and useful form.

California Furniture Manufacturing Company. An imposing display of very rich Dining-room, Parlor and Chamber Furniture.

H. F. Smith, two Bedsteads.

L. A. Petton, Bookstand.

Kimball Manufacturing Company, Tables, Beds, Chairs, Bureaus, etc., well-designed and finished.

CLASS 25.

CARRIAGES, WAGONS, ETC.

Kerr & Goodrich, three Buggies and one Wagon. Their own make; strong and handsome.

Mills & Evans, two Mitchell Wagons.

T. H. King & Co., Carriage Trimmings and Furniture. Display of elegant mountings and lamps in gold, silver, ivory, etc. With these the Sarven Patent Wheels, and Sheldon's Axle, with Egleston's Patent Oil Chamber. This chamber has a wick protruding above the axle. One oiling is enough for ninety days.

J. D. Arthur & Son, one Dayton Wagon, and one Jackson Wagon (with gear.)

Leffel & Myers, two Trucks.

William Williams, one Swivel Shackle.

Pacific Congress Water Company, one Wagon.

M. C. Hawley & Co., two Wagons.

Milton Newell, one Buggy. This was greatly admired for its strength and lightness.

Baker & Hamilton, two Bain Wagons.

Kohler, Chase & Co., Children's Carriages and Wagons.

Schœnfeldt, Cohn & Co., two Children's Carriages.

Plath & Kitzmuller, four Buggies. Handsome road buggies and doctor's phæton.

G. W. Lawton & Co., Milk Wagon.

B. Gallagher, one Carriage, of Eastern make, and very handsome.

Linforth, Kellogg & Co., two Studebacher Wagons.

J. W. Lowry, two Carriages. These were good, serviceable vehicles.

John F. Van Court, two Buggies and Extension Top Wagon. The wagon was a most creditable piece of workmanship throughout.

Treadwell & Co., One Wagon.

Abbott, Downing & Co., Concord Carriages and California Buggies. New Hampshire manufactures.

Carvill Manufacturing Company, Buggies, Phaetons, Clarences, etc. This company made a very fine display of elegant wares. The Clarence coupé was especially admired. The bearings of this were on the hind axle springs, and on the fifth wheel of the fore. All the iron work of this vehicle was light and handsome.

Osborn & Co., Case filled with Metal and Ivory Carriage Furniture.

Z. H. Cunningham, Milk Wagon. This was very well made and solid, and displayed a great improvement in the manner of attaching the pole, which is self-sustaining, and can readily be detached and laid aside. The pole-chain is entirely dispensed with.

CLASS 26.

MANUFACTURES IN GLASS, EARTHENWARE, POTTERY, STONE, GLASS BLOWING, CUTTING, AND COLORING IN PROCESS OF MANUFACTURE, BOTTLES, DEMIJOHNS, GLOBES, WINDOW GLASS, MIRROR GLASS, CROCKERY, PORCELAIN, FIRE PROOF WARE.

San Francisco Glass Works, Glass Ware, Carboys, etc. A very full assortment of stout and serviceable ware for all purposes.

Yates & Co., Safety Lamps.

John Taylor & Co., Glass Ware of the Pacific Glass Works. Bottles, Carboys, Tumblers, Pitchers, Tubes, etc., all well-made and substantial.

H. J. Sibley, Mica Lamp Chimneys.

John Gevin, Box of Pipes (own make).

Mrs. H. T. Babcock, one Glass Globe.

S. Hausman & Co., two Parlor Mirrors.

John Mallon, Glass Cutting, Staining, etc. These were specimens of very fine work.

Mills & Brewster, Ornamental Lamps, Embossed Glass, Aquariums, etc. Very beautiful exhibit; the glass work particularly fine.

W. S. Ray, Lanterns, Glasses, etc.

Thomas O'Neill, Cut Glass and Door Plates.

A. Paltenghi, one Italian Marble Mantel.

J. Wairt & Co., one Marble Mantel.

Holmes & Dawson, one Monument and one Mantel. This monument was greatly admired for its simplicity and pure design.

Kohler, Chase & Co., two Vases.

N. F. Marsh, Tuft's Soda Apparatus, complete.

Huntington, Hopkins & Co., one Locomotive Headlight.

Emil Boesch, Japanned Reflecting Lamps, Fancy Lamps. These are made here by Mr. Boesch, the patentee, and are in every way equal to the imported lamps. The principal demand is for the supply of mines and mills; but the excellence of the article is fast introducing these reflectors into hotels, halls and other places of public resort in this city.

J. Browell, Albion Pottery, Vitrified Pipe, Chimney Tops, Vases, Fire Bricks, etc. These articles were of excellent quality, the fire bricks especially being quite as good as the English. The patent chimneys are perfectly fire-proof, and are put up without brick or mortar. The display made by this pottery was altogether one of the most satisfactory in the Fair.

C. Newman, Improved Elastic Demijohn. In this demijohn the bottle is first covered with the common tule reed—a soft elastic substance—forming a cushion, if we may so term it, and the rattan is woven over this, thus doubly protecting the bottle. To liquor dealers, grocery men, druggists, and others, it will prove invaluable, as it will withstand a greater amount of hard usage than the common vessel, and oftentimes save a dozen times its cost in preserving the liquid—sometimes very costly—therein contained.

Manhattan Marble Company. The Company claims that the article is unequaled in the following particulars: Durability, inasmuch as it is not affected by acids, inks, oils, nor by heat or smoke; being of uniform density throughout, it is not as liable to breakage as marble; beauty, as exact imitations of the costly European marbles, Sienna, Jasper, Malachite, Lisbon, etc., which are so much in use in the elegant dwellings of our Eastern cities, can be furnished; cheapness, as these goods are much less in price than the ordinary Italian or Vermont marbles usually sold here. To illustrate something of the process through which the material passes, Mr. A. B. Clason, Secretary of the Company, tells us that it is subjected to 300 degrees Fahr. of heat for twenty-one days before the final finish is put on. The material is imported from England. Samples have been subjected to severe tests by Henry G. Hanks, of the Pacific Chemical Company, with the following results: First, from its composition it must necessarily be durable; second, in several respects it is superior to marble, such as its resistance to the action of acids and of fire; third, it is sufficiently strong to resist any accident likely to occur, which is all that can be said of marble. The works at Oakland are quite extensive, employing from fifteen to twenty men, but the demand is far in excess of the supply. Large quantities of this marble are now being shipped to Japan. The home demand is extensive. Being beautiful, durable and cheap, the article must commend itself to favorable consideration. Mantels which, if made of marble, would cost $600, are made in exact imitation for $160. As this material cannot be soiled by fire, smoke, grease or acid, it must be easily kept in order. Should a piece be broken from a mantel or table, it can be mended so as to leave no trace of the fracture.

Schuster Brothers, Earthquake and Fire-proof Chimney. Constructed of metal or earthen pipes, the lower portion of sheet iron, with a proper opening for a fire-place. The chimney can be constructed in any form, and is intended to rest upon any foundation, or floor, as the weight in ordinary buildings is only eighteen pounds to the foot. Among its many good qualities there is with it no such thing as a defective flue; it is absolutely earthquake and fire-proof.

CLASS 27.

MANUFACTURES IN LEATHER, RUBBER AND GUTTA PERCHA HARNESS, SADDLERY, BOOTS, SHOES, HOSE, TRUNKS, VALISES AND BUCKETS.

The number of exhibitors in this class was fair, though small, considering the extent of the various branches of business connected with these articles in this city. Of the saddlery and harness makers, but one house was represented, and there was only one trunk in the exhibition. The bulk of the articles of this class was contributed by the manufacturers of boots and shoes.

Main & Winchester, a large, excellently-arranged and complete assortment of Saddlery and Harness, Horse-cloths, Mats, Robes, Bits, Bridles, Stirrups, Whips—everything, in short, which a first-class establishment of the kind can furnish.

H. H. Scoville, a Cylindrical Traveling Trunk, cunningly contrived to foil the malice of hackmen and hotel porters, whose chief joy it is to smash the ordinary angular trunk. It is a pity the ingenious inventor did not carry out his idea to its logical conclusion. He has stopped half-way. A cylinder will roll, it is true, if the hackman is considerate enough to throw it on its side; but what prevents his pitching it on end? Mr. Scoville's trunk should be a ball.

J. S. Hittell. A contrivance is fixed to the dash-board of a carriage, and through this the reins are passed and so held that they cannot fall or slip beyond the reach of the driver. The invention is Mr. E. Vile's.

Dietle & Beck, an assortment of Boots and Shoes of their own make.

F. A. Kast, Boots and Shoes.

Einstein Brothers & Co., the largest display of Boots and Shoes on exhibition.

William F. Burke, Custom-made Boots and Shoes in various styles.

Hill & Eastman, Harness from Concord, New Hampshire. Very well made and serviceable.

Beers & Maynard, Boots and Shoes in every style.

Goodyear Rubber Company, Rubber Goods, such as Belting, Hose, Tubes, Capes, Mats, and every form that rubber is made to take, down even to toys. An extensive and interesting display.

H. Royer, Leather Belting, Fulled Raw Hides, and other Leather Goods.

H. N. Cook, Leather Belting, Shoe-leather, Play Pipes, and a general assortment of well-made articles in this line.

C. Sutton, Jr., Water-proof Clothing, such as Oilskin Hats, Capes and Cloaks, Boots and Leggings, etc.

P. Kelly, Custom-made Boots and Shoes, finely finished.

Bloch & Davidson, Morocco Leather, stout and well-finished.

Weaver & Taylor, an assortment of Rubber Goods, nowise inferior to that of the Goodyear Company.

San Francisco *Journal of Commerce*, a Roll of Leather, California production, and contributed by S. C. Gray. Solid and well made.

J. R. Bradstreet, Rubber Mouldings and Weather Strips, to keep out wind and dust from doors and windows.

CLASS 28.

MANUFACTURES OF WOOL, COTTON AND SILK, FURS, BLANKETS, WOOLEN CLOTHS (CLOTHING AND ALL MATERIAL MADE FROM EITHER OF THE FOREGOING OR MIXED).

There were twenty exhibitors in this class, most of them manufacturers and importers of clothing and under-wear. The great Woolen Mills were unrepresented, and their absence was the more remarked that the cloths and blan-

kets of California have acquired a wide reputation throughout the Union. Many visitors had counted on seeing a fine display in this line, and it is a matter of regret that they were disappointed.

California Silk Manufacturing Company, a handsome exhibit of Sewing Silk of every color.

E. C. Kennedy, Carpets, of English and American makers.

Alexander Mackay, Domestic Carpets of Rags. A good article.

Mrs. E. Goldstein, Ladies' and Children's Underwear. A very full assortment.

H. Friedlander & Co. also exhibited every style of Underwear.

M. Lichtenstein, assortment of Underwear.

H. Liebes & Co., Fur Robes. Very handsome.

Mrs. Sullivan, Silk Embroidery and Stamped Goods, of fine and solid finish.

M. Honig & Co., Furs, for Robes and Trimmings, of California manufacturers. Well-finished goods.

Baloun & Stouda, Joseph Figel, Joseph Brothers—these houses exhibited complete assortments of Custom-made Clothing for Men and Boys.

Neustadter Brothers, Men's Furnishing Goods.

Lancaster & Northern, Poheim & Lancaster, stocks of Merchant Tailors' Goods.

Samuel Hill, specimens of the Corticelli Sewing Silk.

J. Green, thirty-one pieces of Ribbon, the first manufactured in California. Substantial and handsome ribbon, the first returns of an industry which is yet to become of immense importance to this country.

Mrs. Dannenberg & Thompson, Ladies' Wearing Apparel. A display of very rich and costly dresses.

Mrs. J. A. Robinson, a Patent Mosquito Bar.

Mrs. L. Olmstead, Spool Floor Mat.

CLASS 29.

MILLINERY, DRESS MAKING, CLOAK MAKING, SEWING MACHINE WORK, CROCHET WORK, KNITTING, TOYS, LACES, EMBROIDERY.

There were a good many exhibitors in this class, which always posesses a great deal of interest for a portion of the public. Those to whom millinery is something mysterious and unfathomable, must confess, at least, that the articles displayed under this class were wonderfully, if not fearfully made.

Miss J Blass, a Crochet Bed Spread.

Mrs. Edwin Harper, five pieces Crochet Work.

Mrs. E. Mosca, a Crochet Spread, in diamonds.

Mrs. J. K. Shafer, Hand-made Lace Work. Beautifully done.

Isaac Lamb, Ladies' and Children's Steam-made Underwear.

Miss M. A. Whittingham, Embroidered Piano Cover and Capes.

Mrs. S. Marks, Hats and Bonnets.

Mrs. G. W. M. Cowles, Mourning and Millinery Goods.

Mrs. H. B. Douglass, one Afghan.

Butler Bros., Millinery Goods. Stylish, and in good variety.

James Spiers, Kapu Cloth, from Fiji Islands, Embroidered Capes and Cloth.

Emma J. Good, two Quilts.

Miss S. Abbey, Ladies' Dress Charts.

Mrs. Nancy P. Smith, two Hand-worked Rugs.

Mrs. Mary Leslie, Embroidered Table Cloth.

Mrs. Rise, Crocheted Buggy Robe, United States' Flag, and Quilt.

M. Freud, Embroideries and Ladies' Underwear. A very full display of beautiful goods.
Mrs. L. H. Jourdan, Crochet Spread.
Mrs. M. E. Doherty, two cases Millinery.
Mrs. Hannah Winer, Embroidered Piano Cover East India Cloth), Chair and Ottoman Covers.
T. Rodgers Johnson, Regalia and Military Goods. Showy and substantial work.
Mrs. Riordan, French Millinery (own make).
C. J. Welden, Suspension Buckle. Ingenious and simple.
Mrs. Luntblede, Bed Spread.
Sullivan & Moorhead, Silk and Velvet Costumes.
Miss B. Powers, Knitted Bed Quilt.
Prof. E. Knowlton, Chenille Rug.
Miss A. McElroy, Cushion.
Miss Emily S. Jones, one Tidy.
Mrs. C. A. Taber, Sofa Cushion.
H. S. Flood, Patent Corset.
G. A. Norton, Doll Wardrobe, patterns.
Mme. Morrow, Royal Dress Charts and Books.
Miss S. Abbey, Excelsior Chart.
Mme. Asten, Fancy Masquerade Costumes.
Mrs. Robert Lang (San Rafael), Knit Bed Spread.
Mrs. A. Ward, Needlework (Giant's Causeway).
Miss E. Duff, Needlework (Flowers).
Mrs. J. C. Plunkett, Zephyr Flowers.
Miss M. Roemer, one Fire Screen.
C. D. Alden, German, Persian and Silk Embroidery.
Mrs. M. Koermer, Embroidered Sofa Cushion.

CLASS 30.

MANUFACTURES FROM FIBRES AND PULP, EMBRACING HEMP, MANILA, FLAX AND RAMIE, HEMP AND MANILA CORDAGE, TWINES, PAPER FROM RAGS, STRAW AND OTHER MATERIAL, PAIPER MACHE.

C. F. Chadbourne, Coates' Thread.
Pacific Cordage Company, Rope and Yarns, various, strong, and well-spun.
Mrs. M. J. Babcock (Oakland), Table Cloth made in 1690.
Mme. J. F. L. Nanns, Table Cloths and Napkins from California Flax. Solid, good fibre.
Pacific Jute Manufacturing Company, Burlaps, Gunny-cloth, Twine, etc. A very satisfactory display of a most important manufacture.
S. P. Taylor & Co., Wrapping Paper, very strong.
Pacific Cordage Company, Cordage. Every variety of rope and cordage, all of the best quality.
San Francisco Cordage Company, Cordage. Rivals the work of the Pacific Cordage Company.
Pacific Cordage Company, two bales Hemp. The fibre long and strong, and the color good.

CLASS 31.

VARIOUS MANUFACTURES, NOT PREVIOUSLY CLASSED.

Unna & Mears, a very handsome show of Feather Dusters and Plumes, of all sizes and shades.

W. H. Burton, an Improved Italian Awning for windows. Not very different from most of its name.

P. C. Van Dyke, Stair Rods of the American Stair Rod Company.

Hartshorn & McPhun, Window Shades, and Self-Acting Shade Roller. Well made, but of no great novelty.

CLASS 32.

NAVAL ARCHITECTURE AND ENGINEERING—INCLUDING MODELS AND DESIGNS OF SHIPS OF WAR AND COMMERCE, BOATS, YACHTS, BARGES, LIFE BOATS, AND LIFE PRESERVERS, MARINE CHARTS, LIGHT HOUSES, MARINE SIGNALS, MODELS AND DESIGNS OF DOCKS, AND FLOATING DOCKS, FLAGS AND BUOYS, DIVING APPARATUS, SUBMARINE BOATS, FLOATING BATTERIES, TORPEDO BOATS, ANCIENT VESSELS AND TRANSPORTS.

H. Wort, model of a Ship.

Major Jack Stratman, ship "Crusader" in case.

California Theater Boat Club, one Boat. Remarkably light and elegant.

Murdock Campbell, model of a Ship and Pilot Boat.

A. T. Peters, model of ship "Golden Eagle."

H. A. Jacobsen, model of a Tug Boat.

E. J. Anderson, model of the ship "Three Brothers," and a Picture.

James O'Brien, model of a Ship. This very creditable piece of work was made by a boy of fifteen, who has only been on board of a ship three or four times.

Pietro ———, model of a Yacht.

Joseph Zammitt, model of a Ship.

Commodore Allen, model of a Ship. Complete working model of a ship, kneed, bolted, planked and copper-fastened, with running gear, windlass, etc., in perfect order.

E. C. E. Vile, model of a Propeller. This invention consists of a cylinder placed in a frame, having a door or valve hinged so as to move freely when the propeller is driven inward or outward. When the propeller is drawn towards the bows of the boat, the door opens and lets the water through the cylinder; immediately at the return stroke the valve closes by the resistance of the water, and the boat moves through the water. By an alternating motion with two propellers, an equal power is kept up, and the boat is driven with great velocity through the water. Each propeller loses what is commonly called "back power" in its stroke toward the bows of the boat.

CLASS 33.

MILITARY ENGINEERING AND ARCHITECTURE.—ARMOR, ORDNANCE, FIRE-ARMS, GUNPOWDER, AND OTHER EXPLOSIVE MATERIAL, TENT AND CAMP EQUIPAGE, ACCOUTREMENTS, GUN CARRIAGES AND APPARATUS, MATCHES, FUSES, PYROTECHNICS, DESIGNS AND MODELS OF FORTIFICATIONS AND LAND DEFENCES, MILITARY BRIDGES, PONTOONS, SIGNALS, FLAGS, MODES OF MINING, ANCIENT ARMOR AND EQUIPMENTS, CASES OF MEDICAMENTS FOR ARMY SURGEONS, AMBULANCES.

G. Francis, model of Bridge (his invention.)

Kabath & Ladd, Gunpowder, Battery Fuses, Wires, etc. Powder of the Laflin and Rand Factory, which makes half the quantity used in the United States. Their goods are packed in metallic kegs.

Liddle & Kaeding, Guns, Pistols, Fishing Tackle, etc.

Philo Jacoby, Fire-arms, Prizes, etc.

E. A. Learned, Milton's Fire Escape.

Giant Powder Company, Samples of Powder.

G. W. Proctor, one Harpoon (California make).

John Daw, Self-acting Gun.

C. T. Healy, Glass Model of New Almaden Mine. In this model the whole mine is distinctly shown, with all its topography, drifts, ore-bodies and so on, in a space of twenty-six inches square by eleven inches deep. The model consists of twenty-six plates of glass about twenty-six inches long by eleven inches in width, set edgeways in a frame and one inch apart, each inch representing one hundred feet, whether in height, depth or length. To prepare the model the surface ground of the mine is first surveyed off for the topography by running lines one hundred feet apart north and south, east and west. Similar and corresponding surveys are next made throughout all the underground workings. There are twenty-six plates of glass, upon each of which one of the surface lines is drawn; whatever points in the underground workings these lines would cut if they were projected so as to form a sectional plane to the lowest explored depths are then depicted upon the glass in their proper position. The ore-bodies, as they existed before being worked out, are distinctly shown in red color (the color of cinnabar), by which they are readily distinguished from the misty or light slate color of the country rock, and the black in which the dead openings have been made in various directions to reach the ore. It is well known to quicksilver miners, and indeed to all who are thoroughly read up on this specialty of mining, that cinnabar ore never occurs in regular veins or bodies, like silver or gold, but is found in detached bodies or deposits. This fact is made strikingly apparent by the merest glance at the model on exhibition. Yet by gradually turning the same or passing around and viewing it from different directions, it will be seen that the main bulk of the ore-bodies bears a most striking general conformity to the abrasion of the surface.

Col. McAllister, Benicia Arsenal, two Gatling Guns. This gun is an American invention, the first one having been made in Indianapolis, Indiana, in 1862. The gun is loaded and discharged continuously by simply turning a crank. The ammunition, which is put up in metallic cartridges, is fed to the barrels from a hopper in a manner similar to that by which corn is fed to a mill. Several of these guns were employed by General Butler near Richmond. In 1865, important improvements were made in the arm, and it was then tested by the United States Ordnance Department at Washington, with such satisfactory results that several large ones were ordered for the Department capable of throwing balls of half a pound weight. Subsequent

tests proving satisfactory, one hundred guns were ordered for the United States service. This gun was on exhibition and trial at the Paris Exposition, and has been tried in the presence of the Emperor of Austria, King of Prussia, and Czar of Russia.

California Powder Works Company, Santa Cruz. The capacity of the Mills is six hundred and forty kegs of mining powder per day, each keg holding twenty-five pounds. The capacity for manufacturing sporting powder is 20,000 kegs of twenty-five pounds each per year. They employ constantly two hundred men, and make all the packages, both iron and wooden, at their own mill. The sizes of grain of the sporting, rifle, musket and cannon powder made by this Company are designated by figures, and not by letters. The old method of using letters is not considered satisfactory, because there is no standard of F recognized by the different powder companies. The numbers 1, 2, etc., in the powder made by this Company and the letters FFF, FFFG, etc., on that of some other manufacturers, indicate the size of the grain, but have no reference to quality. This Company begins with No. 1 for fine grain powder, the coarseness increasing as the numbers increase; No. 2 being coarser than No. 1, etc. The finer grains, Nos. 1 and 2, are mostly used in dry weather, and for quick birds, while Nos. 3 and 4 are oftener used for larger game and longer range, it being a well-known fact that a medium coarse powder shoots more strongly than fine, while it is easier on the shoulder. The Company manufacture several brands of Santa Cruz sporting powder, as follows: The "Cabinet" is a special brand of powder lately introduced for fastidious hunters. It has a diamond grain, and is the best sporting powder manufactured by the Company. It is put up in green canisters. The "Eureka" is put up in red canisters, and is an extra quality of powder, with a crystal grain. The "California Sporting" is made more especially for duck shooting. The "Pacific Rifle" is a fine-grained powder, put up in black canisters. "Quail Shooting" is designed for all kinds of game. "Sea and River Shooting" is a powder of extra quality, made in view of our long wet winters and for use about the bays and marshes. "Valley Mills" is a common gunpowder, suited for all kinds of uses. "Pistol Powder" is manufactured expressly for use in pistols, and is of special fine grain and extra quality. There are different numbers from 1 to 4 each of these brands. The California Powder Works also turn out large quantities of different brands of blasting powder. Of these C signifies coarse; FC, fine coarse; FM, fine medium; F, fine; FF, double fine; and FFF, triple fine. This Company also manufacture Hercules powder for hard rock, pipe-clay, and cement, XX, Hercules (or double strength), for very heavy rock, boulders, etc. This powder is manufactured of nitro-glycerine, and other compounds best known to the makers, and, as they say, "is compounded on strictly scientific principles." The materials of the mixture are chemically prepared, and the manufacturers claim for it safety and economy over other blasting powder.

CLASS 34.

CIVIL ENGINEERING AND ARCHITECTURE.—COMPRISING ARCHITECTURAL AND BUILDING DESIGNS AND MODELS, ORNAMENTAL STONES, LIME AND MORTAR, CEMENT, ARTIFICIAL STONE, BETON, TILES, FLAGS, DRAIN PIPES, BRICK, SLATE, ROOFING MATERIAL, PRESERVED WOOD, APPARATUS AND METHOD OF TESTING MATERIAL, PILES, SCREW PILES, MODES OF OBTAINING FOUNDATION, MATERIAL FOR ROADS AND REPAIRING THE SAME.

William Lynch, Illuminating and Ventilating Tiles, or Glass Lights for

Sidewalks, Cellars, etc. These were well made, and firmly set in iron frames, in the style familiar to all.

H. G. Fiske, California Fire-proof Roofing. The roof is covered with painted metal, and may be flooded in a few moments by water pipes built into the parapet. This style is made ornamental by plants growing in a bed of soil, somewhat after the style of Mexican houses.

Frear Stone Company, Artificial Stone in various forms, such as Vases, Monuments, Building Blocks, Pavement Slabs, etc. This stone is very firm and well-grained, and its durability has been proved in many exposed situations.

John Mel & Sons, French Roofing Tiles, from Marseilles, light and handsome, and in every way an admirable material for roofs. It is much to be desired that we should return to this most solid and picturesque roofing. It is practically imperishable, and absolutely impervious to rain and the heat of the sun's rays. The single objection to it is its weight; and this is an objection only because of our flimsy style of building. We have the material for the very best tiles, in abundance, in this State, and it should be turned to account.

H. H. Scoville, Earth Excavator. A digger, driven by steam power.

J. L. Merrell, Roofing on Felt, Tin and Iron, by a Paint of Soapstone applied to the material.

Schuster & Brothers, Earthquake and Fire-proof Chimneys. These were cylinders of pottery, fitted end to end, and bound at the joints with iron bands or cement, and tied through their whole length by iron rods—a simple and apparently effective arrangement. It remains to be seen how they would endure the actual shock of an earthquake, and on this point we can have no opinion.

J. H. Kröger, a House, in all its details, cut out with a Knife. This work measures about five feet high by four square, and is very creditable to the maker, with whom time was no object.

George E. Hopkins, Fire and Water-proof Roofing, with Slate or Stone Paint on Wood or Metal.

J. A. F. Woolensack, Chicago, Patent Transom Lock and Lifter. The transom is lifted by a pulley, the cord of which is then secured. The model shows an adaptation of this principle to ventilation of buildings.

Eureka Stone Manufacturing Company, Artificial Stone, very hard and seemingly durable, and applicable to all uses of the natural stone.

Van Camp Building Stone. This material is made of Crushed Rock, imbedded in Asphaltum, and pressed into Blocks. It is very solid and hard, and the inventor is confident that it will resist wear in pavements and streets. It is said that a trial will be made of this rock in the street before the Palace Hotel.

Zadig's Patent Blocks. These are made of Cobblestones set in Asphaltum, and are intended for street-paving. Whether they would endure the weight of loaded wagons and trucks must be left to conjecture.

CLASS 35.

PLANS AND DRAWINGS OF PUBLIC WORKS, BRIDGES, AQUEDUCTS, SEWERS, WORKMEN'S RESIDENCES, SANITARY APPLIANCES, AGRICULTURAL ENGINEERING.

Seven exhibitors made their appearance in this class.

C. W. Hendel had on exhibition a Map, in high relief, of Sierra county—an admirable piece of work, as a whole and in detail, and reflecting great credit on the engineering skill of the maker.

Patrick Bralley, Model of a Tide Swimming Bath—a bath with flood-gates to admit the tide, and so furnished with a system of pipes below the floor and around the walls, at the surface of the water, that the water could be heated by steam let into the pipes, and kept at a uniform temperature.

A. M. Jewell & Co., a Wooden Irrigating Pipe for Gardens and Fields.

Charles C. Kuger, a framed Mechanical Drawing, well executed.

C. J. J. Smith, a Patent Ventilator or Bull's Eye.

P. Huerne, a Patent Water Filter, thoroughly simple and efficacious. It is made of a metal tube, enclosing a porous cylinder of artificial stone, with a tin tube at each end of a hole through its center. The water is let in between the metal and the enclosed stone cylinder, runs through this, depositing all impurities as it passes, and comes out pure at the end. To cleanse the filter (an operation which should be performed every day), it is necessary merely to let a stream of water run through it for two minutes by a faucet, which communicates with the hole through the cylinder, so that the water passes through the stone from *inside to outside.*

J. R. Bradstreet, Judge Main's Patent Ventilator, already well known.

CLASSES 35 TO 41.

ART GALLERY.

UNDER THE SUPERVISION OF THE ART ASSOCIATION.

	TITLE.	ARTIST.	OWNER.
1	The Deserted Mill	H. R. Bloomer	J. T. Best.
2	Rock of Gibraltar	G. J. Denny	J. T. Best.
3	Portrait	Paul Petrovits	Paul Petrovits.
4	Portrait	Paul Petrovits	Morris Wurkheim
5	Portrait	Paul Petrovits	Paul Petrovits.
6	Portrait	Paul Petrovits	Paul Petrovits.
7	The Gypsies	William Hahn	William Hahn.
8	Cloud's Rest, Yosemite	William Hahn	William Hahn.
9	Railroad Station, Sacramento	William Hahn	William Hahn.
10	Local Option	William Hahn	William Hahn.
11	Convalescence	William Hahn	William Hahn.
12	Waiter Girl in Costume	Jos. Harrington	Jos. Harrington.
13	Portrait	Mrs. L. Baldwin	Mrs. L. Baldwin.
14	Cook in Costume	Jos. Harrington	Jos. Harrington.
15	Portrait	Miss Rockwell	O. Livermore.
16	Andromeda	Erpikum	W. M. Lent.
17	Evening on the Coast of Holland	Bruegner	Max Burkhardt.
18	Forest Brook	Bruegner	Max Burkhardt.
19	Winter	Bruegner	Max Burkhardt.
20	Moonlight on the Lake	Bruegner	Max Burkhardt.
21	In the Forest: Big Tree Study	Albert Bierstadt	A. Bierstadt.
22	East Indian Jugglers	Benoni Irwin	B. Irwin.
23	Portrait	S. W. Shaw	Cal. L., F. A. M.
24	Portrait	S. W. Shaw	Cal. L., F. A. M.

	TITLE.	ARTIST.	OWNER.
25	Fruit	Mrs. L. E. Keith.	J. T. Best.
26	King of the Forest	Lansing	Mrs. Jerome Rice.
27	The Woodland Path	William Keith	W. Keith.
28	Scene near Russian River	William Keith	W. Keith.
29	The California Alps	William Keith	J. T. Best.
30	Napa Valley, Summer	William Keith	W. Keith.
31	Napa Valley, Early Winter	William Keith	J. T. Best.
32	Sunset, Napa Valley, Autumn	William Keith	J. T. Best.
33	Sunset, Weber Canon, Utah	William Keith	J. T. Best.
34	Ideal Portrait	D. Tojetti	Tiburcio Parrott.
35	Portrait	B. Irwin	B. Irwin.
36	Horace Greeley	D. Tojetti	Tiburcio Parrott.
37	Easter Cross	Mrs. Crocker	Mrs. Crocker.
38	Pair of Salmon	S. M. Brookes	S. M. Brookes.
39	Suspension Bridge, Frazer River, British Columbia	G. A. Frost	G. A. Frost.
40	Gypsy Camp	Van der Venne	Irving M. Scott.
41	Sheridan's Ride	T. B. Read	R. Savage.
42	Mt. Tamalpais	G. A. Frost	G. A. Frost.
43	October, Clear Lake	W. L. Marple	W. L. Marple.
44	Pressing Hay, Marin county	W. L. Marple	W. L. Marple.
45	Still Life Study	Mrs. Crocker	Mrs. Crocker.
46	The Eagle's Nest	Thomas Hill	John A. Faull.
47	Royal Arches, Yosemite	Thomas Hill	W. C. Ralston.
48	White Mountain Notch, N. H	Thomas Hill	J. T. Best.
49	Cascade Lake	Thomas Hill	J. T. Best.
50	Portrait	Geo. H. Burgess.	Mrs. Botsford.
51	Portrait of James Lawrence English, Esq., Grand Master, 1861	S. W. Shaw	Cal.G.L., F.A.M.
52	Pomegranates	S. M. Brookes	S. M. Brookes.
53	Peaches	S. M. Brookes	Hon. W. Alvord.
54	Cluster of Plums	S. M. Brookes	Hon. W. Alvord.
55	Fish and Prawns	S. M. Brookes	Hon. W. Alvord.
56	Portrait	S. W. Shaw	Thomas Hill.
57	Castle and Bridge St. Angelo, Rome.	J.B.Wandesforde	J. B. Wandesforde
58	Venice, Santa Maria della Salute	J.B.Wandesforde	J. B. Wandesforde
59	Portrait	Benoni Irwin	B. Irwin.
60	Our Saviour	D. Tojetti	Tiburcio Parrott.
61	Roman Harvest	V. Williams	J. T. Best.
62	Chickens	W. L. Marple	W. L. Marple.
63	In the Suburbs	Thomas Ross	Thomas Ross.
64	Chickens	W. L. Marple	W. L. Marple.
65	Clear Lake	Norton Bush	Norton Bush.
66	Sunrise	A. Lemon	Mrs. J. P. Moore.
67	The Little Artist	B. Irwin	B. Irwin.
68	Carlyle	B. Irwin	B. Irwin.
69	Mother and Child	D. Tojetti	Tiburcio Parrott.
70	Mater Dolorosa	D. Tojetti	Tiburcio Parrott.
71	Evening, Yosemite Fall	Thomas Ross	Thomas Ross.
72	California Robin	S. M. Brookes	Hon. W. Alvord.
73	Fruit	L. E. K.	L. E. K.
74	Don Quixote	B. Irwin	B. Irwin.
75	Vallejo Street Wharf	Thomas Ross	Edward Bosqui.
76	Landscape Study	Thomas Ross	Thomas Ross.
77	Portrait Study	B. Irwin	B. Irwin.
78	The Poultry Yard	R. Meaes	A. E. Head.
79	Portrait of a Young Lady	Eiler Jorgensen	Joseph Frontin.
80	Portrait of a Young Lady	Eiler Jorgensen	Joseph Frontin.
81	Portrait	Miss Rockwell	Miss Wolfskill.

	TITLE.	ARTIST.	OWNER.
82	Wreck on the Coast	W. A. Coulter	W. A. Coulter.
83	Dog Pointing	E. Narjot	Mr. Villegia.
84	Portrait	E. Narjot	Thomas Hill.
85	Coast Scene	J. B. Wandesforde	J. B. Wandesforde
86	Siberian Scene	G. A. Frost	G. A. Frost.
87	Town of Alamos, Sonora	E. Narjot	G. Almada.
88	Ruth	Miss Rockwell	Wm. Higgins.
89	Rebekah (after Le Compte)	Miss Rockwell	Wm. Higgins.
90	Scene near Nanaimo	G, A. Frost	G. A. Frost.
91	Portrait of Child and Dog	S. Wittenbach	S. Wittenbach.
92	The Sentinel Rock, Yosemite Valley.	Thomas Ross	Thomas Ross.
93	Scene on the Coast of Maine	A. E. Wilson	D. T. Staples.
94	Landscape	Petzoldt	Max Burkhardt.
95	Grizzly Bear and Landscape	E. Wittenbach	E. Wittenbach.
96	Schooner on the Bay	E. Wittenbach	E. Wittenbach.
97	Study	Miss M. Roberts.	E. Bosqui.
98	Landscape	Petzoldt	Max Burkhardt.
99	Portrait	G. Fagersteen	G. Fagersteen.
100	Game Study	J. B. Wandesforde	J. B. Wandesforde
101	The White Cliffs of Old Albion, Coast off Dover	E. Sutherland	E. Sutherland.
102	Bridal Veil Falls, Yosemite	Geo. H. Baker	George H. Baker.
103	Road Scene, North Conway, N. H.	Geo. H. Baker	George H. Baker.
104	Landscape, Old Weir Bridge, Killarney	Alfred K. Kipps.	A. K. Kipps.
105	Early Morning	E. Sutherland	E. Sutherland.
106	Beach near Sorrento	Charles Prosch	Charles Prosch.
107	The Dying Soldier	Mrs. A. E. Wilson	D. T. Staples.
108	Portrait of the late H. Hawes, Esq.		Mrs. Hawes.
109	By the Lake	T. Du Burgue	W. M. Lent.
110	Study of Heads: Koriak Indians	George A. Frost.	Geo. A. Frost.
111	North Beach	Thomas Ross	Dr. May.
112	Triomphe de Polichinelle	De Specht	W. M. Lent.
113	Boarding a Vessel		J. W. Winans.
114	The Lighthouse		J. W. Winans.
115	Street Scene	L. Saurfeldt	W. M. Lent.
116	Moonlight Scene	Ernest Finter	J. W. Winans.
117	Sunset, San Francisco	W. A. Coulter	W. A. Coulter.
118	Study	A. Ste Marie	W. M. Lent.
119	Don Quixote	Heim	John Wooll.
120	Street Scene	L. Saurfeldt	W. M. Lent.
121	Looking Out, Beach Scene	Pinta.	John Wooll.
122	Suburbs of Rome		S. Tams.
123	Snow Effect	Van Hose	W. M. Lent.
124	Fishing Boat	Fréret	W. M. Lent.
125	Fire—Ruin to the Farmer	Pinta	John Wooll.
126	Battle Scene	Cuyp	S. Tams.
127	Angel and Child		S. Tams.
128	Courtship	F. Bulle	W. M. Lent.
129	The Sisters	H. Ledind	W. M. Lent.
130	Venice		W. M. Lent.
131	The Lost Dog	H. Simond	J. L. Bardwell.
132	The Cottage Door	W. Holyoake	John Wooll.
133	Fruit Piece	W. Robbe	W. M. Lent.
134	The Fountain	M. Bounin	W. M. Lent.
135	An English Country Lane	W. Holyoake	John Wooll.
136	Sheep and Lamb	Troyon	J. H. Redington.
137	Relay in the Woods	Engler	W. M Lent.
138	City of Leitmeritz	Oscar Kunath	O. Kunath.

	TITLE.	ARTIST.	OWNER.
139	"Un petit sou—s'il vous plait"	Amelie Fayolle	W. M. Lent.
140	Flowers	Colon	W. M. Lent.
141	On the Canal	E. G. Lepinay	W. M. Lent.
142	Old Horse Turned Out to Pasture	Mrs. Wilson	D. T. Staples.
143	The Way-side Beggar		W. M. Lent.
144	The Letter	Emil Levy	W. M. Lent.
145	Through the Fields	A. Serres	W. M. Lent.
146	In the Woods	De Faux	W. M. Lent.
147	Infancy	Betke	Irving M. Scott.
148	Moonlight, Heidelberg Castle	Gebhardt	J. L. Bardwell.
149	Cattle Piece	Schenck	W. M. Lent.
150	The Ferry	J. Veyrassat	W. M. Lent.
151	Cattle Piece	Savry	Irving M. Scott.
152	St. Sebastian		L. L. Robinson.
153	The Start	A. de Molins	W. M. Lent.
154	Val St. Nicola	E. Petit	A. Laver.
155	Cathedral Peak, from Soda Springs	George H. Baker	George H. Baker.
156	Blonde and Brunette	Ortega	W. M. Lent.
157	"Mauvais Café"	M. Blum	W. M. Lent.
158	The Sentinel	A. Serres	W. M. Lent.
159	Vierwaldstätter See, Switzerland	C. Metz	A. Goldsmith.
160	Niagara		John A. Faull.
161	"L' Education de l' amour"	J. J. Legrionée	W. M. Lent.
162	The Violet Girl	A. Serres	W. M. Lent.
163	Fruit Tasting	A. Deill	A. Goldsmith.
164	"He Does Not Return"	Oscar Kunath	Oscar Kunath.
165	Boys Sliding on Snow	F. Schleger	A. Goldsmith.
166	The Last Possession	R. Hausleitner	A. Goldsmith.
167	The Dowry	After Greuse	J. L. Bardwell.
168	Lilas Blanc	E. David	W. M. Lent.
169	Still Life	Susenbeth	A. Goldsmith.
170	Landscape	A. Shietzhold	A. Goldsmith.
171	Prayer of Jewish Soldiers during the Franco-Prussian War	Prof. Oppenheim	A. Goldsmith.
172	Alsace	Thompson, Paris	Irving M. Scott.
173	Boys Fishing	Sauvage	W. M. Lent.
174	School	Ortego	W. M. Lent.
175	The Adieu	M. Blum	W. M. Lent.
176	Between the Lakes	Karinger	A. Goldsmith.
177	Arranging Flowers	De Specht	W. M. Lent.
178	La fin du jour	Brandon	W. M. Lent.
179	Theseus, King of Athens	Poussin—1600	Lippi Brothers.
180	Amy Robsart and her Lord	Fradelli	J. W. Winans.
181	Ivanhoe, Rebecca and Reuben	Fradelli	J. W. Winans.
182	Killing Swine	G. da Ponte	J. W. Winans.
183	In the Woods	César de Cock	W. M. Lent.
184	Study, Canal Scene	L. W. Hawkins	W. M. Lent.
185	Repentance	Oscar Kunath	Oscar Kunath.
186	Mater Dolorosa	G. Fagersteen	G. Fagersteen.
187	Marine View	G. J. Denny	A. P. Hotaling.
188	Fruit Piece	Barbieri—1500	Lippi Brothers.
189	Fruit Piece	Barbieri—1500	Lippi Brothers.
190	Flight into Egypt	Bassano—1600	Lippi Brothers.
191	St. John Preaching in Jerusalem	Bassano—1600	Lippi Brothers.
192	The Spirit's Flight	After Kaulbach	J. W. Winans.
193	Windmere	Wilson	J. W. Winans.
194	Windmere	Wilson	J. W. Winans.
195	Landscape	Jewett	J. W. Winans.
196	Mt. Hood	R. Swain Gifford	J. C. Merrill.

	TITLE.	ARTIST.	OWNER.
197	Castle on the Rhine—Moonlight		H. Toomy.
198	Daniel in the Lion's Den	Hentsch	J. W. Winans.
199	Judith	Roedel	H. Toomy.
200	Ship "Glory of the Seas."	W. A. Coulter	W. A. Coulter.
201	El Rodeo	Chas. Hopps	Charles Hopps.
202	Admission of Cal. into the Union	Chas. Hopps	Charles Hopps.
203	"It is He!"	A. Teisseire	A. Teisseire.
204	"She is Gone!"	A. Teisseire	A. Teisseire.
205	Portrait	A. Teisseire	A. Teisseire.
206	Portrait	A. Teisseire	A. Teisseire.
207	Diana and Nymph	Attributed to Peter P. Rubens	J. J. Inwalle and A. Langstroff.
208	Goddess of Peace (water color)	Picard	J. L. Bardwell.
209	Roman Charity (water color)	J. Hock, 1782	J. L. Bardwell.
210	Sheep (water color)	A. Mauve	J. L. Bardwell.
211	"Narrenhaus" (the madhouse)	W. Von Kaulbach	Max Burkhardt.
212	Cupid (painted on porcelain)	Oscar Kunath	Oscar Kunath.
213	In the Country (crayon)	Master Hugo Keil	Mr. Keil.
214	Portrait (crayon)	Ellis	Ellis.
215	The Organ Grinder	Oscar Kunath	Oscar Kunath.
216	Portrait (crayon)	Scott Tidball	Scott Tidball.
217	Portrait (crayon)	Scott Tidball	Scott Tidball.
218	Californian lassoing Bear (drawing)	W. H. Hilton	W. H. Hilton.
219	Rodeo Scene (drawing)	W. H. Hilton	W. H. Hilton.
220	View from Berkeley Villa Homestead (water color)	Fred. Whymper	William Stuart.
221	View near Santa Barbara	Wm. Fletcher	William Fletcher.
222	The Raven (drawing)	Oscar Kunath	Oscar Kunath.
223	Fancy Head (water color)	Oscar Kunath	Oscar Kunath.
224	Prairie Grouse	S. M. Brookes	S. M. Brookes.
225	The Family Bible	S. M. Brookes	S. M. Brookes.
226	Portrait	G. H. Burgess	Mrs. E. A. Fargo.
227	Portrait	G. H. Burgess	Frederick Clay.
228	Portrait	G. H. Burgess	Frederick Clay.
229	Portrait (crayon)	A. Hossack	A. Hossack.
230	Portrait (crayon)	A. Hossack	A. Hossack.
231	Portrait (crayon)	A. Hossack	A. Hossack.
232	Fruit Piece (water color)	Miss C. Andrade	Mr. Andrade.
233	Easter Cross (water color)	Miss C. Andrade	Mr. Andrade.
234	Fruit (pastel drawing)	Mrs. J. T. Tucker	Mrs. J. T. Tucker.
235	Death of Palladio (drawing)		J. L. Bardwell.
236	Mt. Hood	Mrs. J. D. Smith	Snow & May.
237	French Ram "Atalanta" entering the Harbor	W. A. Coulter	Charles Haake.

Nos. 238 to 279.—The Oil Paintings represented by these numbers were not sent into the building in due time.

280	Three Frescoes	Otto Schrader	Otto Schrader.
281	Wood Carving, Group of Deer and Pedestal	Melchior Staehli	M. Staehli.
282	Globe of Fish	Mrs. J. P. Barnett	Mrs. Barnett.
283	Scent Basket	Mrs. Watts	Mrs. Watts.
284	New England Woodbine	Mrs. Babcock	Mrs. Babcock.
285	Hair Work	Miss A. Lucke	Miss A. Lucke.
286	Fancy Picture Frame	Jas. Aitken, Jr.	Jas. Aitken, Jr.
287	Picture Frames	Jas. Aitken, Jr.	Jas. Aitken, Jr.
288	Model Map of Sierra County, Cal.	C. W. Hendel	C. W. Hendel.
289	Needle Work	Silvia Rottanzi	S. Rottanzi.
290	Great Seal of California	C. L. Giller	C. L. Giller.

	TITLE.	ARTIST.	OWNER.
291	Basso Rilievo Head of Theodore Tilton, 1858, just previous to marriage.	E. A. Spring, Englewood, Perth Amboy, N. J.	Mrs. T. L. Johns.
292	Frame of Seals	A. Kuner	A. Kuner.
293	Plaster Decorations	Samuel Kellett	S. Kellett.
294	Head of a Satyr	S. Ellis	S. Ellis.
295	Medallion Head	S. Ellis	S. Ellis.
296	Grotesque Head	S. Ellis	S. Ellis.
297	Bacchante	S. Ellis	S. Ellis.
298	Fancy Head	S. Ellis	S. Ellis.
299	Bust of a Gentleman	S. Ellis	S. Ellis.
300	Mechanicl Drawings by Pupils of the School of Practical Civil Engin'g		A. Van der Naillen
301	Stereotypes and Moulds, forms of S. F. *Chronicle*	Messrs. De Young	Messrs. De Young
302	Fire Screen in Chenille Silk	Mrs. M. Kœrner	Mrs. M. Kœrner.
303	Case of Colored Sheet Wax, etc	Hueter Brothers.	Hueter Brothers.
304	Statuette in Marble, "Modesty," presented to P. Mezzara by the late F. L. A. Pioche		
305	Ornamented Vase, original model for the State Capitol	P. Mezzara	P. Mezzara.
306	Statue "Eloquence," original model for the State Capitol	P. Mezzara	P. Mezzara.
307	Bust—likeness of T. Breeze, Esq.	P. Mezzara	P. Mezzara.
308	Medallion—Mrs. C——	P. Mezzara	P. Mezzara.
309	Medallion—Hon. William Alvord	P. Mezzara	P. Mezzara.
310	Medallion—Hon. E. Breuil, Consul General of France	P. Mezzara	P. Mezzara.
311	Bust—Francis Scott Key (author of "Star Spangled Banner"), taken from the only original portrait in existence, the property of Mrs. Turner, of this city, daughter of Francis Scott Key	P. Mezzara	P. Mezzara.
312	Group—Hands with Fruit		
313	Marble Group — copy of Canova's "Three Graces."		J. Oxland.
314	Artistic Bronzes	Locan & Co	Locan & Co.
315	Original Picture of Adolphe Thiers, with autograph		
316	Isometrical View of Building and Yard for Branch Prison, Folsom	R. C. Ball	R. C. Ball.
317	Design for Court House	R. C. Ball	R. C. Ball.
318	Mirror	S. & G. Gump	S. & G. Gump.
319	Carved Walnut Framed Mirror	S. & G. Gump	S. & G. Gump.
320	Mirror	S. & G. Gump	S. & G. Gump.
321	Gilt Table	S. & G. Gump	S. & G. Gump.
322	Wax Flowers	Mrs. J. E. Colter.	Mrs. J. E. Colter.
323	Wax Fruit	Mrs. J, E. Colter.	Mrs. J. E. Colter.
324	Rustic Cross and Ivy Vine	Mrs. J. E. Colter.	Mrs. J. E. Colter.
325	Wax Autumn Leaves	Mrs. J. E. Colter.	Mrs. J. E. Colter.
326	Wax Flowers	Pupil of Mrs. C.	Mrs. J. E. Colter.
327	Magnolia and Autumn Leaves	Mrs. J. E. Colter.	Mrs. J. E. Colter.
328	Basket Wax Flowers	Mrs. J. E. Colter.	Mrs. J. E. Colter.
329	Rustic Cross and Woodbine	Mrs. J. E. Colter.	Mrs. J. E. Colter.
330	Preserved Flowers	Mrs. J. E. Colter.	Mrs. J. E. Colter.
331	White Lilies	Mrs. J. E. Colter.	Mrs. J. E. Colter.

	TITLE.	ARTIST.	OWNER.
332	White Lilies	Mrs. J. E. Colter.	Mrs. J. E. Colter.
333	White Lilies	Mrs. J. E. Colter.	Mrs. J. E. Colter.
334	Rustic Cross and Wild Flowers	Mrs. J. E. Colter.	Mrs. J. E. Colter.
335	Rose	Mrs. J. E. Colter.	Mrs. J. E. Colter.
336	Wax Fruit	Pupil of Mrs. C.	Mrs. J. E. Colter.
337	Fuchsia	Mrs. J. E. Colter.	Mrs. J. E. Colter.
338	Phantom Leaves	Mrs. J. E. Colter.	Mrs. J. E. Colter.
339	Calla Lily	Mrs. J. E. Colter.	Mrs. J. E. Colter.
340	Frame of Plain and Fancy Cards	C. Beach	C. Beach.
341	Plan for a Court of Justice	Dr. Pissis	Dr. Pissis.
342	Plan for a Court of Justice	Dr. Pissis	Dr. Pissis.
343	Study of a Corinthian Entablature	J. G. Moore	J. G. Moore.
344	St. Mary's Cathedral, Edinburg	A. Matthews	A. Matthews.
345	Original Design Parliament Buildings, Ottawa, Canada	Augustus Laver	Augustus Laver.
346	New Capitol Building, Albany, N. Y.	Fuller & Laver	Augustus Laver.
347	Premiated Design, Capitol, Springfield, Illinois	Augustus Laver	Augustus Laver.
348	Premiated Design, Capitol, Hartford, Connecticut	Augustus Laver	Augustus Laver.
349	Cathedral Church, Ottawa, Canada	Augustus Laver	Augustus Laver.
350	Renovation Interior Old Church, Notre Dame at Montreal, Canada	Augustus Laver	Augustus Laver.
351	Perspective View New City Hall and Halls of Justice, San Francisco	Augustus Laver	Augustus Laver.
352	Birds-Eye View New City Hall and Halls of Justice, San Francisco	Augustus Laver	Augustus Laver.
353	Isometrical Plan New City Hall and Halls of Justice, San Francisco	Augustus Laver	Augustus Laver.
354	Premiated Design New City Hall, Philadelphia	Augustus Laver	Augustus Laver.
355	Mirror	Hausmann & Co.	Hausmann & Co.
356	Mirror	Hausmann & Co.	Hausmann & Co.
357	Divinity Church, Seminary Park, Alameda	Bugbee & Sons.	Bugbee & Sons.
358	Mills Seminary	Bugbee & Sons.	Bugbee & Sons.
359	Design for a Court House	Bugbee & Sons.	Bugbee & Sons.
360	Design for a State Capitol	Bugbee & Sons.	Bugbee & Sons.
361	View of the House of Correction, now being built	Bugbee & Sons.	Bugbee & Sons.
362	Ornamental Crayon Drawing	B. Sonnenberg.	B. Sonnenberg.
363	Ornamental Crayon Drawing	S. Braverman	S. Braverman.
364	Ornamental Crayon Drawing	B. Sonnenberg	B. Sonnenberg.
365	Greenwich Park	V. Frazee	A. R. Baldwin.
366	Marbleized Iron Mantel	G. A. Potter	
367	Marbleized Iron Mantel	G. A. Potter	
368	Marbleized Iron Mantel	G. A. Potter	
369	Carved Wood Mantel	Hausmann & Co.	Hausmann & Co.
370	Carved Wood Mantel	Hausmann & Co.	Hausmann & Co.
371	Mantel of California Marble	Jas. A. Pritchard.	J. A. Pritchard.
372	Marble Mantel	Paltenghi & Co.	Paltenghi & Co.
373	Marble Mantel	Holmes &Dawson	Holmes &Dawson
374	Marbleized Iron Mantel	I. T. Milliken	
375	Marbleized Iron Mantel	I. T. Milliken	
376	Marbleized Iron Mantel	I. T. Milliken	
377	Palace Hotel, San Francisco	John P. Gaynor	John P. Gaynor.
378	Friedlander's Block, N. E. angle	O. G. Moore	Wright & Sanders
379	Moss Wreath	S. A. Jackson	S. A. Jackson.
380	Hair Wreath	Mrs. Moody	Mrs. Moody.

	TITLE.	ARTIST.	OWNER.
381	Tapestry	Mrs. C. H. Webb.	Mrs. C. H. Webb.
382	Phantom Leaves	Mrs. Graham.	Mrs. Graham.
383	Phantom Leaves	Mrs. Graham.	Mrs. Graham.
384	Phantom Leaves	Mrs. Graham.	Mrs. Graham.
385	Sea Mosses and Ocean Leaves	A. G. Nye.	A. G. Nye.
386	Sea Mosses and Ocean Leaves	A. G. Nye.	A. G. Nye.
387	Sea Mosses and Ocean Leaves	A. G. Nye.	A. G. Nye.
388	Tapestry—Jesus and the Magdalen	Mary Byrne.	Felix Byrne.
389	Needle Work Flowers	Miss Emma Duff.	J. R. Duff.
390	"Morning"	Mrs. E. M. North.	Mrs. North.
391	Canvas Picture, "The Farmer's Girls"	Miss A. Dabovich.	A. Dabovich.
392	Tapestry, "The Three Friends"	Mrs. P. Hopkins.	Mrs. P. Hopkins.
393	"Night"	Mrs. E. M. North.	Mrs. North.
394	German Kitchen Scene	Mrs. P. Hopkins.	Mrs. P. Hopkins.
395	Architectural Design	T. J. Welsh.	T. J. Welsh.
396	Architectural Drawing	Michael Welsh.	M. Welsh.
397	Perspective Drawing	T. J. Welsh.	T. J. Welsh.
398	Emblematical Picture, Amalgamated Society of Carpenters and Joiners		
399	Design for City Residence	Townsend & Wyneken.	Townsend & Wyneken.
400	Gothic Cottage	Townsend & Wyneken.	Townsend & Wyneken.
401	Italian Cottage	Townsend & Wyneken.	Townsend & Wyneken.
402	Needle Work Picture—School Room Scene	Mrs. A. Ward.	Mr. Tiernan.
403	Needle Work Picture—Giant's Causeway	Mrs. A. Ward.	Mr. Tiernan.

EXHIBITS BY BRADLEY & RULOFSON, 429 MONTGOMERY STREET.

404 The largest Crayon in the United States, 49x67 inches.
405 to 435 Life-size Crayons of Senators Hager, Sargent, Booth and Cole, Hon. Philip Roach, Gov. Stanford, James Lick, Judge Lake, Col. Thompson, Senator Perkins, Louis Eppinger, Esq., W. Willis, Esq., and a number of ladies and children.
436 Gen. Cobb and Staff.
437 to 466 Thirty Imperial Plain and Colored Photographs.
467 to 492 Twenty-five Views of Yosemite and Private Residences.
493 One Frame, Col. Andrews.
494 One Frame, Randolph Rogers.
495 and 496 Two hundred Cabinet Photographs, Porcelain and other pictures.

EXHIBITS BY C. E. WATKINS, YOSEMITE ART GALLERY, 22 AND 26 MONTGOMERY STREET.

497 to 506 Nine Life-size Oil Photographs.
507 to 515 Nine Life-size Crayons.
516 to 522 Seven Colored Imperials.
523 to 526 Four Frames Children.
527 to 534 Eight Frames Cabinets, Celebrities and Private Citizens.
535 to 537 Three Frames Cards, Citizens, etc.
538 to 613 Seventy-five Views in Yosemite, Columbia River, Overland Railroad, Private Residences, etc.

EXHIBITS BY HOUSEWORTH & CO., 8 AND 12 MONTGOMERY ST.

630 to 647 Eighteen Life-size and Medium Colored Photographs.
648 to 659 Ten Large Crayons.
660 to 684 Twenty-five Imperials, Celebrities, etc.
685 to 695 Eleven Frames Cabinets and Cards.
696 One Case Cabinets.
697 to 806 One hundred and ten Yosemite and San Francisco Views, Private Residences, Indian Warriors, etc.

EXHIBITS BY H. W. ARTHUR NAHL, ACADEMY BUILDING, 330 PINE STREET.

807 Horse, "Lady Blanchard," drawing by hand.
808 Horse, "Moscow," drawing by hand.
809 to 814 Six Imperial Photographs in Water Colors.
815 to 822 Eight India Ink Retouched Photographs.
823 to 827 Five Retouched Photographs.

TITLE.	ARTIST.	OWNER.
828 and 829 Two Crayon Photographs	Miss H. Brooks	
830 to 834 Five Colored Photographs	Mrs. Commary	
835 Gov. Booth and Staff	Mrs. E. Eastman.	Gen. Harney.
836 Cadets	Mrs. E. Eastman	
837 Soldiers of National Guard	Mrs. E. Eastman	
838 to 850 Thirteen Colored Portraits	Mrs. E. Eastman	
851 Colored Photograph	Miss J. T. Tucker	
852 and 853 Two Frames Colored Photo.	Mrs. Walton	
854 Water Color Photograph		Mrs. Baldwin.
855 Photocrayon Drawing	Chas. Prosch	Mr. Andrade.
856 Photocrayon Drawing	Chas. Prosch	Mr. Schorcht.
857 Cleopatra, after Gerome	Photograph colored by John Vincent, of London	Max Burkhardt.
858 Marietta	"	Max Burkhardt.
859 Blind Man's Buff, after Meyer Van Bremen	"	Max Burkhardt.
860 "L'amour silencieux," Italian Chro		Max Burkhardt.
861 Design for City Block, San Fran'co	J. E. Towle	J. E. Towle.
862 Design for Suburban Wood'n Church	J. E. Towle	J. E. Towle.
863 Design for Stone Church	J. E. Towle	J. E. Towle.
864 Plans of Same	J. E. Towle	J. E. Towle.
865 Plans of Town Hall	J. E. Towle	J. E. Towle.
866 Elevation of Brick and Stone Residence of W. G. Fargo, Buffalo, N.Y.	J. E. Towle	J. E. Towle.
867 Fontana di Trevi (Rome)		J. E. Towle.
868 Chiesa Santa Maria Della Salute, (Venice)		J. E. Towle.
869 Scent Basket		M. Bennett.
870 Forum of Trajan (Rome)		J. E. Towle.
871 Brick and Stone Residence of George Howard, N. Y.	J. E. Towle	J. E. Towle.
872 Chiesa di San Paolo Atrio (Rome)		J. E. Towle.
873 La Tour des Gendarmes (Caen)		J. E. Towle.
874 Sketch in North of France		J. E. Towle.
875 Sketch in Forest of Fontainebleau, France		J. E. Towle.
876 Head of the Medusa, after Leonardo da Vinci		J. E. Towle.
877 Adams' Illustrated Chart of the World		E. D. Tyne.

878 and 879 Two Scent Baskets.....Mrs. A. Paulson.
880 to 887 Eight Photo's Real Estate Associates' Property..Real Estate Asso.
888 Greek Slave, in wax.....Mrs. A. O. Cook.
889 Basket Wax Flowers.....Mrs. A. O. Cook.
890 Wax Shells.....Mrs. A. O. Cook.
891 Phantom Leaves.....Mrs. A. O. Cook.
892 Wax Autumn Leaves.....Master F.R.Cook.
893 Fancy Leather Work Frame.....Mrs. S. Atkinson.
894 to 898 Five Marble Mantels.....Manhattan Marble Works.
899 to 903 Four Table Tops.....Manhattan Marble Works.
904 and 905 Two Sideboard Tops.....Manhattan Marble Works.
906 Sundry small examples of Manhattan Marble.....Manhattan Marble Works.
907 Fancy Leather Work Frame.....Mrs. S. Atkinson.
908 to 918 Lithographs (plain and tinted), Landscapes, Figures, Stock Certificates, Bonds, etc.....George H. Baker.
919 Shell Work.....A. Medina.
920 Cases of Feather Wool Work.....Mrs. McCowen.
921 Feather Flowers.....Miss D. Krone.
922 Wool Flowers.....Mrs. McCowen.
923 Agricultural Wreath.....Mrs. J. Fowler.
924 Worsted Flowers.....Miss D. Krone.
925 Hair Work.....Mrs. McCowen.
926 Seed Work.....Mrs. McCowen.
927 to 930 One Case and four Frames Fine Ornamental Printing and Engraving.....Cubery & Co.
931 to 933 Three examples of Shell Work.....Mrs. A. Darling.
934 Shell Work.....A. Medina.
935 to 948 Fourteen Wreaths and Devices in Natural Flowers, chemically preserved and enameled (first premiums State Fairs 1870, 1871, 1872, 1873).....Mme. Getz Lucas, 743 Howard St.
949 One Basket Flowers, chemically preserved without enamel..... Same.
950 One Crown, natural flowers chemically preserved and enameled..... Same.
951 One Basket Wax Fruit (first premium State Fair, 1873). Same.
952 Vase, exotic plants in wax..... Same.
953 One Case, American Tulip Tree in Wax..... Same.
954 The Victoria Regia (water lily), copied from the last one which blossomed in Kew Gardens, London, the first ever modeled and exhited in wax in the U. S.. Same.
955 One Vase Eastern Autumn Leaves, both in wax..... Same.
956 One Case Dorlan's Oysters on the Half Shell, Crackers, etc. (in wax)..... Same.
957 One Case Confectionery and Bon-Bons (in wax)..... Same.
958 Scent Basket.....Miss E. Bennett.
959 Scent Sachel.....Mrs. Watts.
960 Drawing of a Steam Engine.....C. T. Winslow.
961 Napoleon.....A. Hagenkamp.
962 Oil Painting, Lake Tahoe.....Miss Addie Levy, (aged 13½ yrs.)
963 Drawing, Gipsy Girl.....S. Bravermann.
964 Drawing, Shakspeare's Birth Place.....H. Fennel.
965 Wax Flowers.....Sallie and Bella White.
966 Crayon Drawing, after Angelica Kauffman.....A. Matthews.

967 Drawing, St. Axat.....H. Fennel.
968 A Cornice.....E. Augur.
969 Cattle, after Rosa Bonheur.....Blanche Lalande.
970 Cain and Abel.....A. Hagerkamp.
971 View in North Wales.....E. E. Mahoney.
972 Quartz Mill at Mariposa.....Ada W. Cox.
973 Ruins of the Castle of Miolan, Savoy.....J. Fennel. (aged 11 years).
974 Basket of Wax Fruit, etc.....Fred. A. Brown.
975 Wreath of Autumn Leaves in Wax.....Fred. A. Brown.
976 to 978 Three Cases Wax Flowers and Fruit.....Fred. A. Brown.
979 "La Sonnette".....Emma Olmstead.
980 Zephyr Flowers.....Mrs. Plunkett.
981 Autumn Leaves.....Miss Martenstein.
982 Case Engraved Wedding Cards, Monograms, Seals, etc.G. M. Wood & Co.
983 German Tufted Embroidery.....E. D. Alden.
984 Drawing, Flowers.....Alice Lalande.
985 Hundred Year Celebration of Amaziah Goodwin.....Albert Dawes.
986 Silk Embroidery.....C. D. Alden.
987 Wax Flowers.....C. D. Alden.
988 Flowers.....W. Spreen.
989 "Longing for the Rhein".....Charles Prosch,
990 Emblematical Picture Amalgamated Society of Engineers, Machinists, Millwrights, Smiths and Pattern Makers.....The Society.
991 The Most Remarkable Buildings in the World.....J. R. Drew.
992 Crayon Drawing.....Clara Ellis.
993 Inlaid Wood.....D. Mojica.
994 to 1008 Fifteen Frames Autographs.....Louis Saroni.
1009 and 1010 Two Frames Wood Engravings.....G. M. Shourds.
1011 The Mountain Spring.....S. Neumann, (aged 13 years)
1012 A Turk.....S. Newman, (aged 13 years)
1013 Puppy.....By a boy who has never had a lesson.
1014 to 1016 Three Masonic Pen Drawings.....J. W. Jamison.
1017 Flower Pot and Scroll.....F. Wagner.
1018 and 1019 Two Colored Illustrations of Fruits.....E. J. Hooper.
1020 Specimens of Wood Engraving.....Theo. A. Butler.
1021 Bohemian Vase.....F. Wagner.
1022 Case of Fine Porcelain Painting.....R. Samisch.
1023 Mechanical Drawing of Steam Engine.....C. W. Moulthrop.
1024 Mechanical Drawing of Pulverizing Barrel.....C. W. Moulthrop.
1025 Foliage.....Alice Lalande.
1026 Lions and Bison (bronzed), copy.....Hubert Burgess.
1027 Last Leap (Deer) copy.....Hubert Burgess.
1028 Anaconda and Animal, copy.....Hubert Burgess.
1029 Setter Dog.....Hubert Burgess.
1030 War Horse, copy.....Hubert Burgess.
1031 Lions and Bison (Plaster, white), copy.....Hubert Burgess.
1032 Model of Bird, copy.....Hubert Burgess.
1033 Italian Ruins.....E. N. Stratton.
1034 to 1057 Twenty-four Photographs, Yosemite Valley, Columbia River, Farallon Islands, etc.....J. C. Watkins.
1058 Marble Mantel.....J. Warte & Co.

The marble of which this mantle is made, comes from the quarries of Jas. Pritchard, at Colfax and Suisun.

CLASS 41.

GOLD WARE, SILVER WARE, WATCH CASES AND JEWELRY.

W. K. Vanderslice & Co., a small but exceedingly handsome collection of Solid Silver Ware, most beautifully made.

Commodore Allen, a Silver Trumpet.

Mrs. L. Ferris, two Gold Glove Fasteners, two Silver Glove Fasteners, and a Frame.

R. W. Jackson, a Case filled with specimens of Abalone Shell Jewelry, such as Cuff-pins, Buckles, Bracelets, etc., finely worked and mounted in gold and silver.

CLASS 43.

WAX WORK, HAIR AND RUBBER JEWELRY, LIGHT ARTICLES OF TASTE AND DEVICE WORK.

The entries under this class were quite numerous, and, for the most part, attractive. The labor and patience expended on many of the articles in wax work, bead work, etc., were such as only amateurs could afford to give. The hair jewelry, a specialty with Mrs. Cook and one or two others, displayed a great deal of taste and skill.

Mrs. C. H. Webb, Tapestry in a Frame.

Mrs. Hannah G. Lucas, Wax Flowers and Preserved Flowers in Frames.

C. D. Alden, Wax Flowers.

Hermann & Co., two Frames of Shell Work.

Mrs. E. L. Martenstein, one Case Fancy Work and Wax Cross in Globe.

Mrs. E. Luckey, one Globe of Wax Fruits.

Mrs. S. A. Jackson, Moss Wreath in a Frame.

Mrs. R. M. Moody, Hair Wreath in a Frame.

Mrs. Sarah Atkins, three Pieces Fancy Leather Work in a Frame.

Mr. F. A. Brown, Basket of Wax Fruit.

Mrs. C. M. Chapman, Fancy Human Hair and a Wax Figure.

D. W. White, Wax Flowers in Glass Case, made by Sallie and Bella White, aged eleven and nine years.

Miss Julia A. Meehan, Wax Flower Cross.

J. T. Jennings, Old Snuff-box in a Glass Case.

B. Goldman, Human Hair Work.

Nathan Joseph, Fancy Goods and Woods from Japan.

Mrs. W. A. Jennings, one Bead Picture.

Mrs. M. Gradwohl, one Vase of Feather Flowers.

Schoenfeld, Cohen & Co., Show Case Fancy Goods, etc.

Mrs. C. Cook, General Hair Work and Jewelry.

Mrs. C. M. Graham, three Globes Phantom Leaves.

Mrs. Cotter, eighteen Globes Wax Flowers.

Mrs. Bonnet, Case Fish-scale Flowers.

Miss D. Krone, two Pieces work, Feather and Worsted.

Mrs. A. McCowen, Frames, Seed, Feather and Hair Work, etc.

Albert G. Nye, Sea Mosses.

Mrs. A. F. Darling, Shell Work.

Mrs. H. Darche, Wax Flowers.

Mrs. J. H. Jones, Wax Flowers.

Frederick A. Brown, Wax Flowers.

Annie Fennell, Bead Work.
Miss M. Miller, Net Hand-worked Curtain.
J. Trubody, Bead Quilt.
Theodore Gidley, Bison Horn with Snuff-box.
W. Bennett and H. H. Thompson, Indian Curiosities.
Isaac Pixley and Mrs. Topping, Child's Dress, one hundred years old; Teaspoon brought on "Mayflower."
Mrs. C. T. Butler, Turkey Feather Collar and Cuffs.
Miss F. Whitmore, Hanging Baskets.
Mrs. M. E. Doherty, Human Hair Goods.
Wilhelmina Spreen, Wreath of Feathers.
Mrs. A. O. Cook, Preserved Flowers and Wax Work.

CLASSES 44 AND 45.

PRINTING, PUBLISHING, PROOF SHEETS OF AUTOGRAPHY, OF LITHOGRAPHY, OF ENGRAVINGS, NEW BOOKS, COLLECTIONS OF BOOKS ON SPECIAL SUBJECTS, PERIODICAL PUBLICATIONS, TECHNICAL AND SCHOOL ATLASES, CELESTIAL AND TERRESTRIAL GLOBES, BOOK-BINDING, STATIONERY, ETC.

The exhibitors in this class were not as numerous as on some previous occasions, but the character of the articles shown was very good.

E. Bosqui & Co. exhibited specimens of Book and Job Printing and Book-binding. Their work was thoroughly good. The blank books, especially, were solid, well-made, and handsome.

J. G. Hodge & Co. made a complete display of blank books and general commercial stationery.

W. P. Harrison showed specimens of printing, such as business and visiting cards, bank cheques, forms, etc.

A. L. Bancroft & Co. had on exhibition a large assortment of stationery and school furniture, such as wall maps, black-boards, desks and chairs.

J. B. Golly & Co. exhibited a number of Globes, on which the land was shown in relief, besides Berghaus' admirable charts and maps.

Matthias Gray. Sheets of music, elegantly printed from block tin plates.

McCurrie & Weber. This young house made a fair display of musical goods.

Miss M. A. McQueen. This lady showed Gaskell's Compendium of writing, embracing specimens of various styles of business and ornamental penmanship.

Louis Saroni. An interesting collection of autographs, principally American, and, in most cases, complete letters or notes.

Mrs. J. Doyen had on exhibition a curiosity in the shape of a copy of the *New Hampshire Gazette*, containing the announcement of Washington's death.

Heald's Business College. A number of frames, with very fine work in penmanship, principally by Mr. F. Seregni, who is without a rival in the art, in this city.

C. Beach. A collection of visiting cards, stamped crests, monograms, etc.

Albert G. Nye. Three engravings, a Sea Moss Album, and Passe-Partout.

E. Wittenbach. Some very creditable lithographic work, such as a portrait of James Lick, and Diplomas.

J. W. Jamison. Three Masonic Drawings, done in very good style with the pen.

J. J. Knowlton. A very large assortment of Inks, Mucilage, etc., of his own manufacture.

Cubery & Co. Specimens of Printing in every style, and very well done.
James T. White & Co. Handsomely bound sets of the New American Cyclopædia.
A. Roman & Co. This house displayed a number of School Desks and seats, and two globes.
E. D. Tyne. A Historical Chart.
G. M. Wood & Co. Specimens of Engraved Cards.
D. McKenzie. Various styles of Pasteboard.

CLASS 46.

SIGN PAINTING, SCENIC PAINTING, STAINING, POLISHING, GRAINING, MARBLING, LETTERING, ORNAMENTATION IN OIL AND WATER COLORS.

G. T. Coles, Ornamental Glass Sign. Handsomely finished work.
Charles Wesley, Rubber Stamps.
Isaacs & Wilson, Metallic Signs. These signs were extremely well made, and displayed a great deal of artistic finish.

CLASS 47.

MUSICAL INSTRUMENTS, WIND INSTRUMENTS, METALLIC, REED AND STRING INSTRUMENTS, PIANOS, ORGANS AND MELODEONS.

Most of the articles exhibited under this class were necessarily imported, and this display was but an index of the extent of musical cultivation and taste in the community. As such, it was remarkable.
Kohler, Chase & Co., Pianos and Bass Viol, Decker Piano and Bass Drum. Decker Pianos, Organs and Musical instruments, Cabinet Organs and Bench, A very extensive assortment.
Schraubstadter & Co., Pianos. These were of Schleip & Bluthner's and Steck's make, the former German manufacturers, and Steck of New York.
Sherman & Hyde, Pianos, Organs and Stools. This was a very full display, especially devoted to the Weber pianos. The "Sherman & Hyde" is a fine instrument, made in the East for this house.
B. Curtaz, Pianos. The "Arion," exhibited by Mr. Curtaz, is said to possess admirable evenness and purity of tone.
W. G. Badger, Pianos and Organs. A fine assortment of the well-known Hallet & Davis pianos and Wood's organs.
George Southwell, Double Bass.
T. M. Antisell, Pianos and Organs. Mr. Antisell exhibited a new piano, the "Antisell," made for his house, and said to possess superior qualities.
George Fahnbach, Pianos.
Woodworth, Schell & Co., Pianos, Organs and Stools. The "Schumacher" piano, exhibited by this firm, took the first prize at the Crystal Palace in 1862.
C. Bœrner, Upright Piano, own make. This was a San Francisco instrument of good tone.

C. G. Ewing, Scale of Piano, "Mathushek" Piano, "Mathushek" Colibri Grand Piano. These instruments are new to the public, but seem to possess solid merits.

McCurrie & Weber, one Piano.

M. Gray, Brass and String Musical Instruments. A very full collection.

C. S. Eaton, Boudoir Organ, Pianos and Organs, Hazelton Pianos, and the Estey Cottage Organs.

CLASS 48.

Union Gas Company, Gas Machine. This machine is of that class which is employed to saturate air with the light hydro-carbon oils, for the purpose of producing an illuminating gas, these machines being known as carburetters. This invention consists in an improved method of introducing the oil to the machine and regulating its flow, and also in the device for periodically stirring up the heavier portions of the fluid which have been increased in specific gravity, and utilizing them by again mixing them with the lighter portions. The air is introduced to a central drum, from which it is distributed by pipes and perforated plates, so that every part of the liquid will be made to give up its vapor and assist in saturating the air—an outer containing vessel for holding the liquid, and an interior air chamber. The outer vessel is kept filled with liquid from a reservoir by means of a pipe. This pipe has two branches, one extending down by the side of the vessel for a purpose hereinafter described, while the other opens into a valve at the top of the chamber. A stop cock prevents the flow of the liquid into the pipe until it is desired. The box is provided with a valve, which closes upward. A long stem extends downward from this valve, and is provided with a float within the containing chamber. By the operation of this float, the valve is closed and the flow of liquid stopped. Whenever the chamber is filled to the desired hight, air is furnished to the machine by a suitable apparatus, and is conveyed from the receiver to the air chamber by the pipes. From the top of the air chamber, pipes lead to the bottom of the chamber, where they terminate in conical perforated or wire screens, which serve to distribute the air through the liquid so that it becomes thoroughly saturated with vapor from every part as it rises to the surface. As the air or gas rises to the top of the vessel, it is allowed to pass up through the pipe into the gasometer. From this gasometer the gas is passed out through the pipe, which is a distributing main. As the liquid becomes relieved of its more volatile portions, it acquires a greater specific gravity, settles to the bottom, and ceases to be valuable for gas-producing purposes, but can still be utilized for mixing with the more volatile portions, and occupying a portion of the space, so that it will not be necessary to introduce so much fresh liquid, as would be the case if all of this heavy portion were withdrawn. For the purpose of concentrating the heavy liquid at the bottom, the inventor employs pipes beneath the bottom of the chamber, which receive a part of this liquid as it settles. In order to stir it up and mix it thoroughly with the lighter liquid in the vessel, the stop-cock is opened at certain periods, and the fresh liquid is allowed to enter the pipe. This pipe connects with the pipes beneath the bottom of the chamber, and the current of new liquid being admitted under the heavy pressure, has the effect of forcing upward all the heavy residue, and mixing it with that contained in the reservoir above. This can be done at any time when desired or needed.

Eureka Gas Company, Gas Machine.

Starr & Mathison, two cases of Antimony and four Plumbago Crucibles. The display made by this firm, though small, is a creditable one, and as new

articles of manufacture on this coast demand more than a passing notice. The works where the antimony is refined are on Berry street below Fourth. They were started in the early part of 1874. The proprietors have labored under peculiar disadvantages in establishing this industry, which it is hoped will be speedily overcome. They were led to believe that antimony ores could be purchased in quantities, whereas, while the works are only of a capacity to reduce forty tons per month, they have been unable to procure even this supply. The ore is reduced in precisely the same manner as it is in England, yet there is a prejudice in favor of English antimony which it is difficult to overcome. The antimony cakes shown at the Exhibition were exactly similar in size, weight and appearance, to those which come from the English market and the metal just as good; yet to effect its sale the manufacturers are compelled to ship it to New York by steamer, where it is sold as regulus of antimony, "French Star," the same brand as the English antimony. Though the consumption of this material in this city is only some eight or ten tons per year, the consumers buy their antimony in New York, and probably get back again the same article that was shipped from here, with freight charges added.

The two principal workmen at this establishment are Englishmen, who have spent most of their lives in this business in England, and who, consequently, make the article exactly as it is made there. They have worked California ore there, and shipped the metal back here; but now when they work the California ore at home, they are forced to sell the product at another place. The reduction of the ore is accomplished in crucibles, each of which holds about fifty pounds. The ore remains in the pot seventy to eighty hours, and is then refined, cast in the usual cakes and shipped. The pots in use are made at the factory, of the best English clay, and last on the fire seventy or eighty hours. The workmen are skilled in the art, which is a somewhat difficult one, and are able to make their own crucibles as well. Works for the reduction of antimony were started at Battle Mountain Station, Nevada, a few years since, but were a failure, through lack of knowledge of the manipulators. The ore for these works comes principally from Battle Mountain Station, though there is a mine in Kern county, California, now being opened, from which a large supply is expected.

The four plumbago crucibles exhibited by this same firm were also made at their works. The workmen are skilled in the manufacture of these articles, but as yet have made few more than those exhibited. All of the plumbago crucibles at present used on this coast are imported, but Starr & Mathison hope to establish themselves here as manufacturers and make enough to supply the home demand if no more. A peculiar kind of plumbago is used in the manufacture of crucibles, and as yet few mines have been opened which furnish ore of the proper quality. Most of the ore from which these crucibles are made comes from the Island of Ceylon, but the Pacific States could furnish a large supply if the mines were opened. Capitalists have not turned their attention in this direction yet, but before many years the plumbago mines of this coast will be looked upon as more valuable than at present. Both antimony and plumbago ores are purchased at these works.

CLASS 49.

PROCESSES AND PRODUCTS OF DOMESTIC ECONOMY, FLOUR, BREAD, CRACKERS, MACCARONI, SPICES, PRESERVED AND CONDENSED MEATS, PRESERVES, SUGARS, SYRUPS, CANDY, BUTTER, CHEESE, TAPIOCA, VERMICELLI (AND GENERALLY UNDER HEADING OF GROCERIES), DRIED FRUIT OF ALL KINDS.

B. C. Brown, Alden Preserved Fruit, Vegetables, and Meats. This elegant

and cleanly process of preserving was very largely illustrated by the specimens shown. We have reason to believe that the Alden method of drying fruit will give rise to an immense industry in this State, where thousands of tons of excellent fruits have hitherto been allowed to rot upon the ground, for want of a market. The fruit dried by this process preserves its natural flavor, and loses but little of its natural appearance. The raisins shown were especially fine.

E. M. Smith, Coloma City, Green Fruit, fine and in good condion.

California Cocoa-Nut Pulverizing Company, Preserves and Jellies.

Tong Chong, six Boxes of Tea.

California Cracker Company. A large and handsome display of every variety of Crackers and Hard Bread, in every way equal to the English in make, and superior in freshness.

Egerton, Allen & Co., Agents, Duryea's Starch.

Marden & Myrick, assorted Spices and Coffee. This was a very creditable exhibit.

William B. & George West, Stockton, Grapes for Raisins, Table Use and Wine.

Cutting & Co., Preserves and Pickles. A very complete assortment of every kind.

J. Vogeley & Bro., Candies and Confectionery.

D. Hirschfeld, Confectionery.

Huston & Probasco, Cases of Candies.

E. Guittard & Co., Chocolate, Coffee, etc. A fine display.

John H. Hegler, Butter and Cheese from the Petaluma Cheese Factory. Well made and good, for ordinary use.

Bowen Brothers, a very extensive display of Groceries in every variety, and Bowen's Yeast Powders.

C. C. Burr, Spices and Mustard.

E. P. Upton, samples of Tea.

Phillips, Wolf & Co., Starch in Boxes.

John H. Fisher, French Mustard.

B. F. Barton, Cream Tartar, Saleratus, Yeast Powders.

Phillips, Tabor & Co., thirty-six packages of Tea.

Bay Sugar Refinery, specimens of Loaf, Crushed and Brown Sugar. The only exhibit from any of our refineries.

F. J. Newberry, a new method of transmitting milk. This is a plan for supplying milk through pipes, like water pipes, laid under ground and cummunicating with each house. The plan seems to imply a reservoir on elevated ground, and the simultaneous milking of countless cows into the same, in order to have the milk fresh. That there are practical difficulties in the way of the plan is no fault of the ingenious projector's. He is entitled to all the credit of his suggestion, and, if he can but prevail upon the cows to help him out, the other obstacles may be overcome in time. Patience works wonders.

C. James King of William, Hermetically Sealed Goods, Preserves, etc. A handsome exhibit.

California Italian Paste Company, various Pastes, Maccaroni, etc. This was one of the most elegantly arranged and attractive exhibits in the building.

D. Ghirardelli, Chocolate, Coffee and Spices. A full assortment of this well-known manufacturer's articles.

S. Wangenheim, Canned and Bottled Goods—Preserves, Meats, Fruits, etc.

J. M. Keeler, Ryder's Fruit-drying Machine. Mr. Ryder, the inventor of this machine, agrees with Alden, that the fruit should be subjected to the greatest heat at first, so as to seal its exterior, and be gradually moved towards a lower temperature; but, instead of keeping the fruit surrounded by the steam of the newly introduced fruit or other moisture, he carries the steam off as soon as it leaves the fruit, thus moving the fruit towards both a decreasing moisture and a decreasing temperature. The operation is carried on in an inclined chamber, through the middle of which the fruit is conducted on trays. The heat is admitted to the under side of the fruit line from the furnace, and rises through the fruit to the space above it, where the current

of hot air carries the moisture off through the upper end of the chamber, without allowing it to strike the fruit above the point where the steam is generated. The goods produced by this drier are thoroughly desiccated, and, instead of being damp and clammy, like the Alden goods, are dry and firm.

CLASS 50.

SPARKLING AND STILL WINES AND LIQUORS.

Köhler & Frohling, Wines and Brandies. A full collection of the favorite native wines and brandies of this old established house.

Gustave Mahé, Cases Golden Wine (1871). Mr. Mahé's wine is made from what is called the Mission grape, without any admixture of foreign grapes. It is singularly light and pure, and a fine example of what may be done by skillful and patient handling of our native resources. In our opinion, it deserved a special premium, had premiums been offered. Mr. Mahé's property consists of about one hundred acres, forty-five of which are planted with vines. Of the seventy thousand feet of vineyard, twelve thousand are in vines nine years old, eight thousand five years old, thirty-five thousand in their fourth year, and the remaining fifteen thousand are three years old. Mr. Mahe estimates that when all these vines are in full bearing, (which will be in two or three years' time,) they will yield an average of from thirty to thirty-five thousand gallons of wine. In 1874, eighteen thousand feet in bearing yielded eight thousand five hundred gallons. The whole vineyard is planted with the grape known as the California Mission. The cellars, which are two and three floors deep, have a capacity of a hundred thousand gallons in casks and bottles together. The wine is to be kept in the cellar at least three years, that length of time being necessary to give it the greatest part of its valuable qualities, and M. Mahe intends to give it to the consumer in glass only, that he may be satisfied it cannot be used in any but its naturally pure state.

At the vintage, which is always in October, from the 15th to the 30th, the grapes, as soon as they have been gathered and brought to the press, are stripped from the stems. The stems are carefully thrown aside, and the grapes fall from the stripping machine into a mill, which breaks the grape without crushing the seeds. From this mill the broken grapes fall on the press, from which the juice passes directly, through India rubber pipes into the casks, arranged on the lowest floor to receive it. There the juice ferments, and is drawn off three times the first year, twice the second year, and once only the third year; and always in January. The third year the wine is bottled, in the month of February; and it is not offered for use till six months later, about September.

The pulp and solid part of the grapes left in the press are subjected to the action of a hydraulic press of sixty thousand pounds force, worked easily by one man. The distillation of the Golden Wine showed the following per centage of alcohol: Vintage of 1869, 12 per cent.; vintage of 1870, 11 per cent.; vintage of 1871, 11¼ per cent. It contains, therefore, the same proportion of alcohol as the wines of Bordeaux.

F. & P. J. Cassin, Champagne (Heidsieck), O. K. Plantation Whisky.

Neis & Ebert, Liquor Dealers' Articles.

Henry Gerke, Assorted Wines. The "Gerke" wine keeps its place among the best white wines of California.

T. G. Cockrill & Co., Whisky.

Chenery, Souther & Co., Whisky.

H. Winkle & Co., Wines. Some of the light wines exhibited by Mr. Winkle closely resemble those of the Rhine.

CLASS 51.

BITTERS, CIDER, ALE, PORTER, BEER AND VINEGAR.

H. Epstein & Co., I. X. L. Bitters, Liquors and Bitters.
Cutting & Co., Wine, Cider, etc., put up by themselves.
Chenery, Souther & Co., Ginger Brandy and Orange Bitters.
Sweetzer & De Long, Marin county, Cider Vinegar, of very good quality.
Dr. J. Renz, Renz's Herb Bitters.
F. & P. J. Cassin, Bitters of their make.
Merrifield & Rosener, Pale Ale, Ale and Porter, of their Star Brewery, and said to be equal to the English articles.

CLASS 52.

CHEMICAL AND PHARMACEUTICAL PRODUCTS.—ACIDS, ALKALIES, WAX, SOAP, PERFUMERY, ROSINS, ESSENCES, DYES, VARNISHES, PAINTERS' MATERIALS, PROCESSES OF THE LABORATORY, BLEACHING, DYEING, CURING, TANNING, VEGETABLE AND ANIMAL OILS, ETC.

A fair show was made in some of the articles in this class, with, perhaps, too large a proportion of medicines, recognized and unrecognized. Yet, considering the public appetite for pills and potions, even these have a legitimate place in an Industrial Exhibition. With us, medicine, like thought and speech, is free; nor have we to fear any Order in Council locking up, as Sydney Smith has said, "the bowels of mankind, through fourteen degrees of latitude." It is the shadow of a very different fear which overtakes the mind at the contemplation of the enormous activity in the commerce of drugs and nostrums. One may well tremble for the future of the race, when he remembers that at least ninety-nine one-hundredths of these preparations are worse than useless. Useless or not, men will take them, and since they are to be taken, it is well to have them done up in neat forms and packages.

Hutchings & Finlayson, Crude and Refined Whale Oils. Small, but interesting display.

Pacific Oil and Lead Works, Linseed Oil, raw and boiled, Castor Oil, Oil Cake, etc. This was a very handsome show, with its long flasks of delicately-tinted oils. Specimens of castor beans were exhibited, produced in Illinois, California and Mexico. Of these the Mexican were the largest, though the difference between them and the Californian was not great.

B. Goldman, Hair Dyes and Tonics.

C. F. Weber, Axle Grease.

Josiah Sessions, Vernon Mineral Water, from East Oakland—said to be an excellent remedy for obstructions of whatever nature.

A. F. Evory, Diamond Catarrh Remedy.

Henry Lake, Boot and Shoe Blacking.

B. Bendel & Co., Matches. A full assortment of really useful matches.

San Francisco Gas Light Company, Preparations of Ammonia, for cleaning purposes.

F. M. Orjubin, Cleaned Work, Blankets and woolen articles. Very good work.

C. Peterson & Co., Soaps of the Union Soap Factory. Coarse soaps for ordinary purposes.

Newman & Bennet, five Soda Apparatuses and one Generator.

Hueter Brothers & Co., Varnishes, Gum Copal, Sheet Wax, etc. One of the most satisfactory displays in the Fair. The varnishes were in great variety, and seemed to be admirably prepared. A great mass of gum copal, from Australia, attracted a good deal of attention. The sealing wax appeared to be of excellent quality.

California Bleaching Soap Company. The soap exhibited by this Company seemed to be hardly dry enough, but its bleaching properties were undeniable. This Company has a large contract with the Mission Woollen Mills, for supplying them with this soap for a year.

Dr. B. J. Smith, Water, called Aqua Vitæ, from a supposed medicinal spring.

Hucks, Lambert & Green, Hucks & Lambert's Axle Grease. This old-established article keeps up with its competitors.

Robinson & Co., Soaps of various kinds.

Dr. J. B. Pinchard, Apparatus for the Cure of Consumption. An admirable invention, were it not for the necessity of going into a decline in order to test its merits.

J. Gates & Brother, Proprietary Medicines.

William G. Moore, Brilliant French Polish.

California Cocoa Nut Pulverizing Company, Pulverized Cocoa Nut and Cocoa Nut Oils.

H. A. Benjamin & Co., Pacific Coast Congress and Seltzer Waters, said to be very wholesome and efficient.

A. G. Nye, Various Sewing Machine Oils.

John F. Snow, Goods, Cleaned and Dyed. Excellent work.

H. Williams, Bitters, Extracts, Essences, etc.

A. Bertin, Cleaned and Dyed Goods. Very creditable.

Pacific Glue Manufacturing Company. Glue, very well made, Hair and Fibres.

Standard Soap Company, a Collection of very fair Soaps.

H. P. Coon, Cologne Water and Catarrh Remedy.

Mrs. J. B. Walters, Hair Restorative.

J. Wyeth & Co., Philadelphia. The Department of Medical Chemistry is represented by a fine display of medicines prepared expressly for apothecaries. They are from the chemical works of Messrs. Wyeth & Co. Among these we notice Elixirs of Calisaya Bark, Taraxacum, Ferrated Gentian, Bromide of Potassium, Valerianate of Ammonia, Hops, etc.; Compound Syrups of Hypophosphite of Lime, Soda and Potassa; Compound Fluid Extract of Buchu, Pareira Brava and Collinsonia, as also of Beef, Iron and Wine; various Effervescents, as Benzoate of Potash, besides other combinations, such as Nitrate of Potash, Bromide of Potash, etc.; Pepsin in various forms; Pills, such as Quinine, Calomel, Aloes and Myrrh in one; Lady Webster Anti-Periodic Pills—a name of doubtful orthodoxy. The manufacturers are not to be held responsible for the incongruous mixtures of many medicines. They obey orders from the craft, and they put up no medicine without a label, giving the items and proportions of ingredients. Physicians may not approve of such revelations to the public, but the chemists deserve credit for honesty and fair dealing, and we believe that apothecaries may rely upon the purity of their preparations.

FOURTH ANNUAL EXHIBITION

OF THE

Bay District Horticultural Society,

OF CALIFORNIA,

IN CONJUNCTION WITH THE MECHANICS' INSTITUTE; TO OPEN TUESDAY, AUGUST 18TH, 1874, IN MECHANICS' PAVILION, IN THE CITY OF SAN FRANCISCO.

RULES AND REGULATIONS.

1. Articles offered for competition must be entered on or before Monday, August 17th, and delivered as follows:

Articles exhibited during the First Week must be delivered before 12 o'clock, noon, Tuesday, August 18th.

Articles for exhibition during the Second Week must be delivered before 12 o'clock, noon, Tuesday, August 25th.

Articles for exhibition during the Third Week must be delivered before 12 o'clock, noon, Tuesday, September 2d.

Articles for exhibition during the Fourth Week must be delivered before 12 o'clock, noon, Tuesday, September 9th.

2. All articles must be properly named, and entered in the name of the grower or owner.

3. All articles entered for competition must have been produced by the exhibitor, or have been in his possession for at least six weeks.

4. Competition for premiums is open to all.

5. No article on exhibition will be entitled to a premium unless it possesses points of superiority.

6. Articles for exhibition must be entered and staged by numbers; and no cards bearing the names of the exhibitors can be attached to them before the awards are made public.

7. Dishes, glasses, and vases, for the display of fruits and flowers, will be furnished free of charge.

8. No article can be removed from the place of exhibition unless by permission of the Superintendent of the Horticultural Department.

9. The Horticultural Exhibition will be closed from Monday morning until Tuesday noon, of each week, for the purpose of making necessary changes and renovations, and delivery of plants.

10. Exhibitors competing for premiums will meet on the evening of the opening of each week, for the purpose of appointing judges; in case the exhibitors fail or neglect to appoint them, then the Trustees of the Horticultural Society shall name the judges. No person can be judge and exhibitor in the same class.

11. The judges must hand in the awards in writing, under sealed envelopes, to the Secretary of the Society, within three days of the opening of the exhibition of each week. The decision of the judges in all cases will be final.

12. The names of exhibitors should be attached to the articles exhibited as soon as the awards have been made.

A. KELLOGG, M. D., President.

F. A. MILLER, Secretary.

PREMIUM LIST.

FIRST WEEK.

1. Flowering plants in bloom, not exceeding fifty specimens in fifty varieties.
   - First prize $20 00
   - Second prize 12 00
   - Third prize 8 00
2. Australian Evergreens, not exceeding forty specimens in forty varieties.
   - First prize $15 00
   - Second prize 10 00
3. Coniferæ, not exceeding forty specimens in forty varieties.
   - First prize $12 00
   - Second prize 8 00
4. Hardy Ornamental Foliage Plants, not exceeding twenty specimens in twenty varieties.
   - First prize $12 00
   - Second prize 8 00
5. Tropical plants.
   - First prize $20 00
   - Second prize 10 00
6. Hardy Climbing Plants, not to exceed twenty specimens in twenty varieties.
   - First prize $10 00
   - Second prize 5 00
7. Ferns, not to exceed forty plants in forty varieties.
   - First prize $15 00
   - Second prize 10 00
8. Greenhouse and Conservatory Plants, not to exceed forty specimens in forty varieties.
   - First prize $20 00
   - Second prize 12 00
9. Japanese Plants, not to exceed twenty specimens in twenty varieties.
   - First prize $10 00
   - Second prize 5 00
10. Rustic Hanging Baskets with living plants.
    - First prize ..... $ 4 00

SECOND WEEK.

11. Roses in Bloom, not to exceed twenty specimens in as many varieties.
    - First prize $12 00
    - Second prize 8 00
12. Fuchsias, not to exceed twenty specimens in as many varieties.
    - First prize $12 00
    - Second prize 8 00
13. Double Geraniums, not to exceed ten specimens in as many varieties.
    - First prize ..... $ 6 00
    - Second prize 4 00

14. Zonale Geraniums, not to exceed ten specimens in as many varieties.
    First prize.....$ 6 00
15. Variegated Leaf Geraniums, not to exceed ten specimens in as many varieties.
    First prize.....$10 00
    Second prize..... 5 00
16. Tender Ornamental Foliage Plants, not to exceed twenty-five specimens in as many varieties.
    First prize.....$20 00
    Second prize..... 10 00
17. Coleus, not to exceed ten specimens in ten varieties.
    First prize.....$ 6 00
    Second prize..... 4 00
18. Pinks, not to exceed fifteen specimens in fifteen varieties.
    First prize.....$ 5 00
    Second prize..... 3 00
19. Bouvardias, not to exceed ten specimens.
    First prize.....$ 5 00
20. California Native Plants, not to exceed ten specimens.
    First price.....$ 6 00
21. Wire Hanging Baskets, containing growing plants.
    First prize.....$ 3 00

THIRD WEEK.

22. Tender Climbing Plants, not to exceed 15 specimens in as many varieties.
    First prize.....$10 00
    Second prize..... 5 00
23. New and Rare Plants.
    First prize.....$20 00
    Second prize..... 12 00
24. Flowering Begonias, not to exceed ten specimens in as many varieties.
    First prize.....$ 6 00
25. Ornamental Foliage Begonias, not to exceed fifteen specimens in fifteen varieties.
    First prize.....$10 00
    Second prize..... 5 00
26. Pelargoniums, not to exceed ten specimens of as many varieties.
    First prize.....$ 6 00
27. Pansies, in not more than twenty varieties.
    First prize.....$ 5 00
28. Gloxinias, in not more than ten specimens of as many varieties.
    First prize.....$ 6 00
29. Caladiums, in not more than ten specimens of as many varieties.
    First prize.....$10 00
30. Marantas, in not more than ten specimens of as many varieties.
    First prize.....$10 00

31. Rustic Flower Stand, containing growing plants.
    First prize ..... $ 4 00
32. Verbenas, in not more than ten specimens of as many varieties.
    First prize ..... $ 5 00

CUT-FLOWERS.

33. General assortment—not to occupy more than four feet square.
    First prize $10 00
    Second prize 5 00
34. Roses.
    First prize ..... $ 8 00
    Second prize 4 00
35. Gladiolus.
    First prize ..... $ 5 00
36. Dahlias.
    First prize ..... $ 5 00

FOURTH WEEK.

BOUQUETS.

37. Basket of Flowers ..... $ 6 00
38. Best Pyramid Bouquet 3 00
39. Best Table Bouquet 2 00
40. Best Wedding Bouquet 3 00
41. Best Funeral Wreath 5 00
42. Best Funeral Cross 5 00
43. Best Floral Design 10 00
44. Wire Flower Stand, with growing plants.
    First prize ..... $ 3 00
45. Fern Case.
    First prize ..... $ 5 00
46. Coniferæ Cones.
    First prize ..... $ 5 00

AMATEUR LIST.

COMPETITION OPEN TO AMATEURS ONLY.

FIRST WEEK.

47. Collection of Specimen Plants.
    First prize ..... Diploma of the Society.
    Second prize ..... $ 5 00

SECOND WEEK

48. Collections of Flowering Plants.
First prize.....Diploma of the Society.
Second prize.....$ 5 00

THIRD WEEK.

49. Collection of Foliage Plants.
First prize.....Diploma of the Society.
Second prize.....$ 5 00

FOURTH WEEK.

50. Collection of New and Rare Plants.
First prize.....Diploma of the Society.
Second prize.....$ 5 00

FRUITS.

FIRST WEEK.

51. Best collection of Plums.....$ 8 00
52. Best collection of Peaches..... 10 00
53. Best collection of Pears..... 15 00

SECOND WEEK.

54. Best collection of Apples.....$15 00
55. Best collection of Tropical Fruits..... 15 00
56. Best general collection of Fruits..... 15 00

THIRD WEEK.

57. Best collection of Wine Grapes.....$10 00
58. Second best collection of Wine Grapes..... 5 00
59. Best collection of Table Grapes..... 10 00
60. Second best collection of Table Grapes..... 5 00
61. Best collection of Quinces..... 8 00

FOURTH WEEK

62. Best general collection of Fruits.....$20 00

Suitable prizes will be awarded to children who will exhibit plants received from the Society on former exhibitions, during the fourth week of the exhibition.

All communications must be addressed to

F. A. MILLER,
Secretary Bay District Horticultural Society.

The Fourth Annual Exhibition of the Bay District Horticultural Society, in conjunction with the Ninth Industrial Exhibition of the Mechanics' Institute, opened on the 18th of August, 1874. It had been doubted whether many of the florists and nurserymen would exhibit, the probable duration of the Exhibition being greater than most of them were prepared to face; but, after all deductions were made, the show was in every way creditable.

The First Week's display presented the principal features, in green-house and conservatory plants, ferns, etc. Tropical plants were shown by R. B. Woodward and Miller & Sievers, Mr. Woodward winning the first prize. The first prize for ferns was carried off by Miller & Sievers, who exhibited forty choice varieties, such as *Adiantum Farleyense*, *Adiantum amabile*, *Ciboteum Glaucum and Ciboteum Chamissoi* (pulu tree ferns from the Sandwich Islands), *Pteris argyrea*, *Platycerium grande*, and others. A number of Japanese plants attracted a great deal of attention.

The Second Week was devoted to Roses, Fuchsias, Geraniums, Bouvardias, etc., but the chief attraction was the collection of tender ornamental foliage plants. These were shown by Mr. Thompson, of Oakland, R. B. Woodward and Miller & Sievers.

The Third Week brought out tender climbing plants and rare specimens, such as Begonias, Pelargoniums, Pansies, Verbenas, etc. There was also fine display of cut roses, dahlias, gladioli and pinks.

The Fourth Week's show was Bouquets, Decorations, Fruits, Fern Cases, Rustic Stands and Baskets. A piece of floral decoration, the "Temple of Liberty," by August Duhem, was remarkably fine. Of the fruit, the wine and table grapes, sent by W. B. West, of Stockton, and the apples and pears from D. C. Young's place, Sonoma, were very fine. Mr. E. D. Waters, of Stockton, contributed some dried and preserved fruits of very good appearance, plump, clean and bright.

R. B. Woodward, twenty-one collections Plants, three collections of Fruits.

Miller & Sievers, twenty-eight collections of Shrubs, Trees and Plants; four collections of Cut Flowers, Rustic Stands and Baskets, Wire Stands and Baskets, Fern Cases and Aquariums.

F. J. Schaefer, Hanging Fountain and Patent Sprinkler.

R. Malmgren, Case of Dahlias.

C. Groves, five collections of Plants.

Russell Dunn, Amateur collection of Plants.

J. Murphy, Case of Pinks.

E. J. Hooper, Chromos of Fruit.

August Duhem, Bouquets and Floral Decorations.

Hugo Leopold, Floral Baskets and Decorations.

Orsen Sharkey, Pyramid Bouquets.

D. C. Young, Case of Plums (twelve varieties), Case of Peaches, Case of Grapes (sixty-one varieties), Case of Pears (seventy-eight varieties), Case of Apples (one hundred and three varieties), Case of Quinces (eight varieties).

W. B. West, Case of Wine Grapes, Case of Table Grapes.

R. B. Woodward, Case of Apples, Case of Pears, Case of Table Grapes.

E. D. Waters, five varieties of Dried Fruits, four varieties of Candied Fruits, seven varieties of Preserved Fruits, four varieties of Pickled Fruits, nine varieties of Jellies.

E. M. Smith, Coloma, six varieties of Seedling Peaches.

G. H. Gruenhagen, Wire Work.

McNally & Hawkins, Fountains and Aquariums.

Mr. Keeler, Statuary.

APPENDIX.

The Board of Managers of the Ninth Industrial Exhibition, desiring to bring together, in an available shape, a body of statistics relating to the industries of the State, sent out circulars early in September to the manufacturing and business houses of the city, in the hope that direct and authentic information, asked for in this way, would not be withheld. The result was not satisfactory. The answers received were few in number, but they embody so much that is permanently valuable, that the Board determined to print them as an appendix to the report of the Exhibition; and they are accordingly subjoined, in alphabetical order.

Following these is a report on experiments made with coal at the pumping works of the Spring Valley Water Works. For this extremely valuable record the Board is indebted to Charles Elliot, Esq., City Superintendent.

CIRCULAR.

San Francisco, September 7th, 1874.

Dear Sir:—The Board of Managers of the Ninth Industrial Exhibition, desiring to embody in their forthcoming report the statistics of California's productions, venture to call upon you for answers to the following questions, and for such other facts relating to the interest you represent, as you may deem essential.

Very respectfully yours,

A. S. HALLIDIE, President.

1. What are the sources of supply in this branch?
2. What is the history of the business for the past four years?
3. What is the present production?
4. What number of hands employed?
5. What is the place of destination of products?
6. What, in your opinion, is desirable to give greater extension to this industry?

ALDEN FRUIT PRESERVING COMPANY.

San Francisco, Cal., December 12th, 1874.

A. S. Hallidie, Esq., President Board of Managers Mechanics' Institute—*Dear Sir:* In answer to the questions proposed, we beg to submit the following:

1. *What are the sources of supply in this branch?*

The articles treated by the Alden process of pneumatic evaporation are principally fruits (apple, apricot, fig, peach, prune, raisin grape, Zante currant, etc.), vegetables (bean, onion, pea, tomato, etc.), meats, fish, hops, tobacco, hides, etc. What the capabilities of the State are for the production of these would seem hardly to need comment, in view of the recognized fine quality and present enormous yield; while in the future the field opens out

so widely as to tax the most vivid imagination. In the matter of fruits alone, California is already acknowledged to take the lead of all other States and countries, both in the excellence of the product and in the prolificacy of the soil. Blight, mildew, curculio, worms, and all the diseases so common in other regions, are here spared the fruit-gower, and the State would be indeed a horticultural paradise, could the fruit which is or might be raised find a market. As the case now stands, every year large quantities of fruit are allowed to rot on the ground because the expense of picking, packing, transportation and commissions leaves no margin of profit from the ultimate selling price. This is also the difficulty met by the producers of the more perishable vegetables. In fact, the local market is so limited that in season the choicest fruits and vegetables are sold as low as one cent per pound, wholesale. Shipment East, in the fresh state, has been tried on a small scale, but this mode can never satisfactorily dispose of our resources. Still, even under the disadvantages noted, fruit in California is surpassed in importance only by the mining and wheat-producing interests. Were the fruit-grower placed on a footing with the wheat-grower, the situation certainly would be reversed. And this, it is claimed, the Alden process will bring about. The Alden factories will draw their supplies from home sources, which are practically inexhaustible. The conditions are peculiarly favorable to the establishment of curing houses, for the greater part of our fruits and vegetables must go to them or rot; and, in turn, the factories will vitalize the farming interest on which they depend. The supply of other articles suited to treatment by the Alden process is also local and great.

2. *What is the history of the business for the past four years?*

In this State the Alden process is comparatively a novel thing, having been introduced operatively in 1873. In the Eastern and interior States, however, Alden goods had been manufactured some time previously, being supplied largely to the commissariat of the United States army and navy. The first factory started in California was at San Lorenzo; from the outset this has paid stockholders two per cent. per month. Encouraged by the success here met with, the fruit-growers of other sections, as enumerated below, have taken hold of the enterprise with enthusiasm, and no failures nor disappointments have been reported. The goods prepared have been of uniform grade, as care was taken in granting charters to select men and localities which would not tend to depreciate the standard, it being deemed of the utmost importance to maintain the character of California produce for the common good.

3. *What is the present production?*

The factories in operation are as follows: At San Lorenzo, five evaporators (or single machines); at Sonoma, three evaporators; at Vacaville, two evaporators; at San Jose, two evaporators; at Centreville, three evaporators; at Los Angeles, three evaporators. These eighteen evaporators have a capacity of curing eleven hundred bushels of apples, pears or peaches daily, or eighteen tons of grapes. The fruit-curing season lasts six months. The produce of the factories mentioned, in round figures, amounts to $275,000 for 1874. In 1875, the factories now in operation, together with those contracted for, will, it is expected, produce cured fruit, etc., to the value of $3,000,000. This total will in time be multiplied indefinitely, as every fruit-growing district in the State, capable of supporting an Alden factory, will have one.

4. *What number of hands employed?*

The particular kind of material under treatment determines the number of hands, as the amount of labor in preparing for the drier is by no means a constant quantity. While working on apples, for instance, each evaporator requires the services of two competent workmen, and twelve boys or girls, or Chinamen. This represents the average number of hands employed. For grapes, which require but little preliminary attention, six or eight boys or girls will suffice. In working certain articles, such as sweet corn, for example, as many as fifteen common laborers are needed.

5. *What is the place of destination of products?*

The local demand is naturally limited, owing to the abundant supplies of fresh fruit. The San Francisco agents have therefore shipped East by rail Alden goods by the car-load, which are there disposed of at unvarying schedule rates, independent of competition and of fluctuations in the market for common dried fruit. A large foreign trade will undoubtedly spring up when the goods become better known abroad. In fact, the available market is practically unlimited. Prunes, raisins, etc., prepared by the Alden process, will compete successfully with the best of foreign make. Heretofore, New York and Chicago have been our largest buyers, these cities being centers of distribution for the Atlantic sea-board and the interior, respectively.

6. *What, in your opinion, is desirable to give greater extension to this industry?*

Simply that the public shall become acquainted with the facts that the production of commercial fruits and vegetables, in connection with the Alden process of preservation, is one of the most pleasant and profitable industries, and that the Alden products are cheaper and better than sun-dried and canned goods. It is admitted that, in California, all the conditions are favorable for the production, in unlimited quantities, of the finest fruits and vegetables in the world; and it is also well understood that we have not the resident population to consume these immense productions, and that they will not bear the cost of transportation, in the fresh state, to distant markets. Neither can we hope to find a remunerative market for inferior dried fruits or vegetables at home or abroad; but for such goods as are prepared by the Alden process, there is no danger of overstocking the market.

The Alden process is *concentration*. The free water, from sixty to eighty per cent., is removed; the articles are *preserved*, not dried; their original color and flavor are retained, and they will keep for years in any climate. The saving in packages and freight, over canned goods, is immense, and worthy the careful consideration of merchants and traders. To illustrate: One case of "Alden" onions, weighing 58 pounds gross, is the equivalent, for all culinary purposes, of 550 pounds or five bags of fresh. One case of "Alden" peas, weighing 43 pounds gross, is the equivalent of, and will go as far in family use, as seven cases of canned peas, weighing 350 pounds. The same rule applies to all the fruits and vegetables. The annexed table of wholesale prices is convincing proof of the cheapness and economy of the Alden goods:

									COIN.	
Apricots	in	10	lb.	bxs.,	1	lb. equal to	8	lbs. fresh,	$0 32	per lb
Apples	"	40	"	"	"	"	7	"	16	"
"	"	10	"	"	"	"	7	"	18	"
Cherry Currants, stem'd	"	50	"	"	"	"	5	"	30	"
" " "	"	10	"	"	"	"	5	"	32½	"
" " "	"	1	"	cad's	"	"	5	"	33⅓	"
Corn, Sweet	"	35	"	bxs.	"	"	3	2-lb. cans	30	"
" "	"	10	"	"	"	"		"	32½	"
Cherries, Kentish	"	1	"	cad's	"	"	7	lbs. fresh,	55	"
" assorted	"	1	"	"	"	"	6	"	75	"
Onions	"	10	"	bxs.	"	"	11	"	40	"
"	"	50	"	"	"	"	11	"	40	"
Pears, Bartlett	"	10	"	"	"	"	9	"	45	"
" "	"	1	"	cad's	"	"	9	"	50	"
" assorted	"	50	"	bxs.	"	"	8	"	22½ to 35	"
" "	"	10	"	"	"	"	8	"	25 to 40	"
" "	"	1	"	cad's	"	"	8	"	40	"
Peaches, pared	"	1	"	"	"	"	12	"	33⅓	"
" "	"	10	"	bxs.	"	"	12	"	30	"
" unpared	"	40	"	"	"	"	10	"	15	"
Plums, pitted	"	10	"	"	"	"	8	"	30	"
" "	"	1	"	cad's	"	"	8	"	35	"

Prunes	in	40	lb.	bxs.,	1 lb.	equal to	4	lbs. fresh,	$0 20 per lb.
"	"	10	"	"	"	"	4	"	22½ "
Peas, green, sweet	"	35	"	"	"	"	5	2-lb. cans,	45 "
" " "	"	10	"	"	"	"		"	47½ "
Potatoes	"	40	"	"	"	"	4	lbs. fresh,	14 "
Rhubarb	"	25	"	"	"	"	11	"	14 "
Pumpkin	"	40	"	"	"	"	16	"	20 "
Squash, Marrowfat	"	40	"	"	"	"	16	"	20 "
Beef	"				"	"	5	"	40 "

When we consider that the tariff valuation of dried fruits imported into the United States annually exceeds $15,000,000, and that all the articles can be grown in California and placed upon the market in a cured condition infinitely superior to the imported article, the prospective magnitude of this new industry will be appreciated.

Our farmers are already getting their eyes open to the advantages of the Alden method; and they are aware, too, that fruit crops are more certain than wheat, and that an orchard or vineyard will not exhaust the soil as wheat does.

The best way possible to make the curing of fruits and vegetables, on a commercial scale, a success in California, is the adoption of the coöperative system. Fruit-growers should combine and erect Alden factories of sufficient capacity to work up all the surplus fruits, etc., in the neighborhood, which factories should be under the management of competent superintendents; thus a uniformly good article will be produced, the reputation of California goods will be kept at the highest point, ensuring that good prices will always be realized. *We must work for and maintain the severest standard of excellence, and then our success is certain.* The coöperative plan has been adopted by the cheese manufacturers in the Eastern States, and has proved eminently successful. Fruit-growers, being stockholders in the local factory, would then work up their own produce, and thus derive a double benefit—in saving their fruit, and in the ordinary profits of the factory. Perhaps there is no branch of manufacture which succeeds so well on the coöperative plan as this. It has been tried, and with the most gratifying results.

Respectfully submitted,

GEO. W. DEITZLER,
President of the Alden Fruit Preserving Company of California.

BILLIARDS.—ANSWER OF JACOB STRAHLE & CO.

San Francisco, October 17th, 1874.

A. S. Hallidie, President of Board of Managers of the Ninth Industrial Exhibition—*Dear Sir:* Your circular of September 7th ultimo, in relation to our branch of industry, and making six different inquiries about the same, has been received. We respectfully submit the following answers:

1. The sources of supply for our woods, California and Oregon, and other goods, New York, England, France.

2. During the past four years the pockets on billiard tables have been suppressed; the sizes of billiard tables have been made smaller, and the wire cushions invented by M. Delaney (of California) have been largely introduced in the United States, and generally substituted for the other kinds heretofore in use.

3. We are now manufacturing one hundred and fifty billiard tables per year. All the other billiard manufacturers combined produce about fifty tables yearly—being a total of two hundred tables manufactured and sold on this coast every year.

4. We employ constantly twenty-five men in our factory, and give employment to about one hundred more men outside.

5. Our goods (billiard tables) are sold principally and are used on the Pacific Coast, from Victoria north to Acapulco south; Salt Lake, east; and on the west we supply China, Japan, the Sandwich Islands, and even so far as Tahiti.

6. Now, for the last question, what, in our opinion, is desirable to give greater extension to our industry. A greater refinement in the tastes of our people and the general prosperity of our State would, we think, have a tendency to create a greater demand for our goods. The general suppression of games of chance would also, in our opinion, vastly increase the taste for billiards.

Very respectfully,

JACOB STRAHLE & CO.

BORAX.

San Francisco, September 15th, 1874.

A. S. Hallidie, President of the Board or Managers of the Ninth Industrial Exhibition, San Francisco—*Dear Sir:* Your favor of the 7th instant has been duly received. It is with pleasure that I answer the few questions you ask me relating to the interest I represent.

1. The sources of supply are inexhaustible.

2. The Columbus Borax Refinery, or E. K. Stevenot & Co.'s, is the first borax refinery ever started in San Francisco, and is also the first one that ever worked the borates that were discovered on the Pacific Coast. E. K. Stevenot & Co.'s refinery is the only one that is refining borax on this coast at the present time.

3. The present production of refined borax is about forty tons per month.

4. From ten to twenty hands are constantly employed.

5. The refined borax is used on this coast, in the United States, and some is shipped to Europe. Most of the supply used on this coast was formerly imported from England, but shortly after the establishment of this refinery the importation of refined borax was discontinued and has been ever since. Two years ago the borax refined commenced to be shipped to Europe, and a large portion of it is shipped there yet.

6. What is desirable for this industry, is for the people to get more familiar with the great qualities of refined borax. The use of it is yet in its infancy. Refined borax should be used for a great many purposes, such as the protection of valuable buildings against the destructive action of the atmosphere and fire. For example: If the application should be made on the new Mint of San Francisco, the poor quality of stone that has been used for its erection would become superior to any stone used; furthermore, any design or colors could be applied to it, which would give a richer appearance to the buildings. It will be used with great success in working ores. Its quality of cleaning wool, as well as any kind of clothes, and also a person's head, or the skin of any animal, such as a horse (for it will cure any skin disease), is not known enough. The piece of refined borax shown by us at your Ninth Industrial Exhibition is the largest that has ever been shown at any exhibition in the world.

Very respectfully yours,

E. K. STEVENOT,

Chemist and Manager of the Columbus Borax Refinery.

CIGARS.

San Francisco, September 24th, 1874.

1. Havana, and State of Connecticut.
2. Continually increasing.
3. About 8,000,000 Cigars the past twelve months.
4. From two hundred and twenty-five to two hundred and seventy-five.
5. Pacific Coast States and Territories, Montana, Colorado, Missouri, Illinois, New York, Iowa, Wisconsin and Kansas.
6. Proportional low rates of freight by rail to points beyond Ogden, U. T., also to Denver and other towns on line of railroad in Colorado. Chinese labor in the manufacture of cigars in this city, has, since several years, cut off the importation of domestic made cigars from New York and other Eastern cities. We have the advantage of cheap labor and superior workmanship, to which they (the Chinese) are particularly well adapted; without them but very little or no manufacturing would be done here. We are now enabled to compete with the East, and are doing a fair trade in that direction with good satisfaction to the consumers.

Yours truly,

LEWIS BROS.

CHOCOLATE AND SPICES.

A. S. Hallidie, Esq.—*Dear Sir:* In answer to your circular we beg to say that the sources from which we draw our supplies of Coffee, are principally Central America, Manila and Java; our Cacao comes from South and Central America, and our Spices from China and the East Indies. Our business has largely increased in extent during the past few years, consequent on the increase of population. The consumption of Coffee is estimated at 6,000 bags or 780,000 pounds monthly, of which the Coffee roasters distribute probably one-half or 390,000 pounds. Adulteration is carried on to a considerable extent in this as in every kindred business, but the public soon learn to distinguish a good from a bad article, and the manufacturer who supplies the former finds his reward in an increasing business, while his competitor enjoys generally but a brief career in spite of low prices and charlatanry. The production of Chocolate here amounts now to about 20,000 pounds per month, and the consumption of this excellent beverage is constantly increasing, as its health-producing and preserving qualities become known. The production of spices of all kinds by the Spice mills is probably 50,000 pounds per month, of which Pepper and Mustard form one-half the quantity. In the aggregate, the production and value of this industry may be summed up as follows:

Coffee, 780,000 pounds per month, at an average of 25c per pound	$195,000
Chocolate, 20,000 pounds per month, at 25c per pound	5,000
Spices, 50,000 pounds per month, at 25c per pound	12,500
Total	$212,500

This is equivalent to a value of $2,550,000 per year. The number of persons employed in this industry, directly or indirectly, is probably not less than two hundred and fifty. The products are distributed over the Pacific States and Territories, and as far east as Utah. Very little is exported to the Sandwich Islands, China and Japan. Like all other manufacturing interests, our great desideratum is increased population, which is naturally followed by increased consumption. Competition at present is so great in this branch

that goods are sold here at from fifteen to twenty per cent. lower than in New York. For the importation of all material required in this branch, San Francisco is most favorably situated.

E. GUITTARD & CO.

515 Commercial street, San Francisco.

CORDAGE.

1. Manila.
2. ————
3. Three million pounds.
4. Ninety men, women and boys.
5. Pacific coast.
6. ————

J. D. FARWELL,

Agent Pacific Cordage Company.

FURNITURE.

1. Fully seven-eighths of the furniture is manufactured here, one-eighth imported from the East. Chairs are nearly all imported, but ought to be made here. Only capital, enterprise and experience needed.
2. Business largely increased, with fair profit.
3. Fully $1,500,000 manufactured in San Francisco and vicinity.
4. At least 2,000.
5. The whole coast this side of Ogden; also Central America, Mexico, Sandwich Islands, Japan and China.
6. Energy, enterprise, experience and a lower rate of interest on capital.

CALIFORNIA FURNITURE MANUF'G CO.

JUTE MANUFACTURE IN CALIFORNIA.

San Francisco, October 5th, 1874.

Secretary Mechanics' Institute—*Dear Sir:* With reference to your statement requesting statistics pertaining to the manufacturing interest we represent, I would submit to you the following remarks:

Our factory has been in operation five years, during which time we have made several extensions of our originally small working capacity.

At the present time we contemplate a further considerable addition, which, when completed, will represent a manufacturing capacity of from six to seven million grain sacks per year.

Just now we employ close upon five hundred hands, mostly Chinamen, inasmuch as it is absolutely impossible to collect that number of white people at factory wages. Any manufacturing prospectus of this kind, that will promise to employ white labor only, panders merely to popular prejudice, and signifies intentions which cannot be carried out.

The number of grain sacks, wool sacks, etc., required for the coming years (with a constantly increasing area of agriculture) may be safely set down at a total of 20,000,000 grain sacks for California and Oregon, and about 100,000

wool sacks (not including potato, barley, bean sacks, etc., as well as fleece twine and burlaps for packing purposes, all made of jute). The value represented in these figures is fully $3,000,000, all of which could be manufactured in this country. The main source of supply is from Dundee, Scotland, the home of this manufacturing branch, whence are shipped nearly everything in jute goods required in the United States. The raw material is imported from Calcutta, the shipping port of jute, at the East Indies.

The import duty in the United States for jute is $15 per ton; that of burlaps 30 per cent. *ad valorem;* and of sacks 40 per cent. *ad valorem.* A notion prevails among some farming sections in California that jute could be profitably cultivated here.

My opinion, however, is that this is not so. Not that some portions of our State might not be admirably adapted to the jute, both as to soil and climate; the principal difficulty, however, lies in the enormous difference in rates of wages paid here and in India—a difference that can never be made up by means of protection and saving in freight; for it must be remembered that San Francisco holds out great inducements to vessels for the purpose of wheat shipments, even at comparatively low rates of freight.

We can more than compete with Scotland in manufacturing cost, and, considering the fact that jute cannot now be profitably worked here, it is clear that the greatest impetus to the business here in the way of legislative enactments would be given by the abolition of the duty on the raw material, and continued, if not increased, protection upon the manufactured article. Even as matters stand, however, there is undoubtedly a great future for this kind of enterprise. The quality of our goods (samples of which were exhibited at the Fair) stands to-day superior to the imported article, as acknowledged by all impartial judges; for while we do not give that perfect gloss and finish to our sacks, in order to avoid weakening this frail fibre, our goods have a far greater intrinsic strength, added to a more ample holding capacity, as to the quantity of wheat. The sea voyage, moreover, is apt to damage the imported sacks, which generally arrive here in a weakened state. Nearly all the sacks required are shipped to Europe, filled with wheat. The raw material of weich they are made being naturally weak, it is important to farmers to obtain as strong a sack as possible; in which regard the local factory will always stand superior. Farmers may not be aware that the sharp competition in this business for the past few years has enabled them to supply themselves at comparatively cheap rates.

Yours truly,

PHILIP SUSMANN,

Secretary Pacific Jute Manufacturing Company.

LEATHER.

San Francisco, September 10th, 1874.

A. S. Hallidie, Esq., President Mechanics' Institute, San Francisco—*Dear Sir:* In reply to the questions contained in your favor of the 8th instant, we beg to state in regard to the tanning business on this coast in general, and our own firm in particular:

1. The supply of hides tanned in California (chiefly salted hides) is derived from the slaughter-houses and butchers of the city and State, from Oregon, Nevada, the Sandwich Islands and Mexico. The Brooklyn Tannery is supplied from the slaughter-houses of Oakland and San Francisco. The tan bark is oak from the Coast Range mountains, from the Bay of Monterey to Humboldt county.

2. The number of tanneries in operation now is much larger than four years ago; the business is fairly remunerative when carried on with sufficient capital and necessary skill. Prices of leather have varied some, and are somewhat lower than four years ago.

3. The present production of the Brooklyn Tannery is about 25,000 to 30,000 pounds of harness leather, skirting and sole leather per month.

4. The number of hands employed are twelve to fifteen.

5. The leather made is partly consumed in this city, in the interior of the States of California and Nevada, in Boston and New York, in Germany and Switzerland, and much of it this year goes to Japan and China.

6. In order to extend the business of tanning, it is necessary to have capital at lower rates of interest, lower freights per railroad to the East, and more reliable skilled labor. At the present time the Railroad Company charges $1.50 for hides and $2.35 on leather to Boston, thus raising the prices of hides and depressing the value of leather in this market.

Respectfully,

CRIST & RUED,

Proprietors Brooklyn Tannery.

MARBLE.

San Francisco, October 3d, 1874.

Board of Managers Ninth Industrial Exhibition — *Dear Sirs:* The sources of supply in this business are Italy, which sends the white Carrara; Belgium, which furnishes black marble—Vermont, Columbia, Indian Diggings and Volcano. The business, which was dull in 1871 and 1872, has revived for the past two years. The present production of this State is, Columbia, 250 tons; Indian Diggings, 125 tons, mostly used at Sacramento; Volcano, 75 tons. The importations this year will reach: Italian, 1,275 tons; Vermont, 80 tons; Belgium, 80 tons. Besides these I estimate 90 tons Pritchard dark marble. The number of hands employed in the business is from 180 to 200. Places of destination, San Francisco and the Pacific coast generally. In answer to the sixth question, I hold that the high rate of freightage tends to keep the consumption of marble down.

Yours truly,

A. PALTENGHI.

SHINGLES.

San Francisco, October 8th, 1874.

1. Chief sources of supply are the Coast Range of mountains between Spanish Town and Santa Cruz, Humboldt Bay and Truckee River.

2. In the year 1861, there were made about 600,000 sawed shingles; in 1862, 5,000,000; in 1863, 10,000,000; in 1873, 70,000,000.

3. Nearly all of the machines used are of the Huntington patent, no other machine having as yet been able to compete with it.

4. Two hundred and fifty.

5. Principally San Francisco.

6. ————

F. A. HUNTINGTON.

SILVER WARE.

San Francisco, September 9th, 1874.

A. S. Hallidie—*Dear Sir:* Your circular of the 8th was received, and we answer your questions as follows:

1. We use Nevada silver in bars, and granulated, which we buy from the San Francisco refinery, and Mexican and South American coin from brokers and merchants.
2. Business has steadily increased for the last four years.
3. We produced last year goods to the value of $90,000.
4. We employ seventeen hands at present—fourteen men and three boys.
5. We send our goods all over California, Nevada, Oregon, the Pacific slope territories, Mexico and Sandwich Islands.
6. A better supply of skilled labor, as we are laboring under great disadvantages in securing good, steady workmen. If we could procure good, reliable men, we could undersell Eastern manufacturers.

Respectfully yours,

SCHULZ & FISCHER.

SODA.

To the Board of Managers of the Ninth Industrial Exhibition:—The Nevada Soda Company was incorporated on the 20th day of September, 1872. Since the above date 2,200 tons have been taken from the mine. What the present production is would be rather difficult to say, as we have always had more than to supply the demand. Twenty-five hundred tons will be taken out this year. We are manufacturing the crude soda into sal soda, with facilities in our works to supply the entire Pacific coast in that line. Our soda mine is situated in Churchill county, Nevada, about twenty-two miles southeast from Wadsworth, the latter place being our shipping point by rail to this city. Our manufacturing works are located in this city. We have fifteen men engaged in our employ. To give to this industry a greater extension is to compete with the imported soda, and undersell the same article, which we feel confident to do henceforth.

NEVADA SODA COMPANY.

TOBACCO.

San Francisco, September 14th, 1874.

A. S. Hallidie, Esq., President Mechanics' Institute—*Dear Sir:* We are in receipt of the circular issued by the Institute, asking information relating to the tobacco interests of the State. We take pleasure in supplying such information as will meet the requirement—a brief history of this growing interest will perhaps best supply the information. Tobacco culture and manufacture previous to 1872 (the date of the patent issued to Mr. J. D. Culp, of Gilroy, Santa Clara county), had not attained sufficient foothold to place it prominently forward as an industry of the State. In 1872 Mr. Culp succeeded in perfecting a system which fully demonstrated the practicability of curing the finer grades of tobacco, and that the climate of California was peculiarly adapted to the raising of the plant and the proper curing of the

same. Since which the cultivation of tobacco has rapidly increased, it having been demonstrated that it can be profitably produced in nearly every county in the State below the snow belt. Early in 1872 Mr. Culp disposed of his patents for curing to a company since incorporated under the name of The Consolidated Tobacco Company of California, for the purpose of growing and curing tobacco, as well as the manufacture of cigars and tobacco. This Company produced in 1873 about a half million of pounds, consisting mostly of tobacco grown from Havana and Florida seed, and in the latter part of 1873 erected factories at Gilroy, where they are working up the crops of 1872 and 1873.

The crop of 1874, grown by this Company and others under their letters patent, will reach nearly, if not quite, two million pounds—about one-fourth of which will be Havana seed, the remainder mostly Florida seed. There is practically no limit to the amount that can be raised in California, as she has a greater amount of land adapted to growing the finer grades of tobacco than any other State in the Union. These facts have been made known to such an extent that there is every prospect of this branch of culture reaching by natural progress as great a magnitude as prudence will warrant. Manufacturers in the Eastern States are turning their eyes California-ward, and there is reasonable probability that within a few years we will not only manufacture all we require for home consumption, but export largely of our surplus to the East. The product of this Company has in part been shipped to New York, where both the cigars and tobacco find ready sale at remunerative prices.

Respectfully yours,

THE CONSOLIDATED TOBACCO COMPANY,

Per E. Briggs, Agent.

VARNISHES.

San Francisco, September 15th, 1874.

A. S. Hallidie, President Mechanics' Institute—*Dear Sir:* In reply to your inquiry regarding the manufacture of Varnishes we submit the following:

The crude material used is gum copal, linseed oil, spirits turpentine and benzine. The gum is imported direct from the eastern coast of Africa, the East Indies and Australia. It greatly varies in quality and price, as does the varnish which is made from it.

Our firm has been the only one engaged in this branch of business up to the present time. In 1857, sixteen years ago, the firm of Marx & Hueter (as we were styled then) received a diploma from the Mechanics' Institute for varnish manufactured in this State. Owing to the limited demand at that time, and the difficulty to lay down the crude materials, the project was abandoned and not taken up again until ten years afterward. Ever since we have found it decidedly up-hill work, the competition from the East being very severe. The prices were run down until there was no profit left, and our chances looked slim. Then some of the Eastern manufacturers, who were the first to ruin the prices, commenced adulterating their varnishes with ordinary rosin, worth about one-fifth the price of copal, and soon the market was drugged with such varnishes, which were actually not worth the barrels they were in. We then found that customers who had left us were coming back, all willing to pay a better price for a superior article. Although a great many consumers are still deceived by Eastern drummers who represent unscrupulous manufacturers, the majority will use no other goods but such which have always proved reliable. Eminent American firms in the East,

such as Wm. Tilden, Blodgett, Valentine, Minnett, have maintained their reputations. We claim for our varnishes that, besides being pure, they are better adapted to this climate than even the better Eastern. The present production is 2,500 gallons per month, but have the facilities to manufacture 10,000 gallons without increasing the number of hands employed, which at present numbers six. We have been supplying consumers and the trade generally in this city and State.

Yours truly,

HUETER BROTHERS & CO.

WIRE ROPE AND WIRE.

San Francisco, September 10th, 1874.

1. Sources of supply are: Iron wire, of all grades, is manufactured by the Pacific Wire Manufacturing Company, of this city; steel wire, which is both tempered and hardened, is imported by me from England; galvanized wire, imported from England and Germany. Sixty-six per cent. of the wire consumed in making ropes is imported, the remainder being made here.
2. During the past four years business has fully doubled. Facilities for manufacturing, in the shape of new and improved machinery, etc., enable me to turn out three times the amount of the present demand. The deep mines on the Comstock ledge, and other localities, have created a demand for long wire ropes of the highest tensile strength, and during the past four years the length of these ropes has increased from 1,500 to to 2,200 feet.
3. The present production amounts to about $250,000 per annum.
4. Twenty hands are employed. Automatic machinery dispenses with the necessity of many hands.
5. The principal places of destination are California, Nevada, Utah, Idaho and Mexico.
6. The manufacture, in this city, of all the different kinds of wire used, would undoubtedly help this branch of industry, as I am compelled to carry a stock of foreign wire to the amount of $50,000 or more. The increase in facilities of communication with other mining countries, such as Mexico, would help the reduction of taxation on improvements, such as machinery used in manufacturing houses to cover the machinery, and licenses for carrying on business would help in a general way.

A. S. HALLIDIE.

WOOLEN MANUFACTURES.

1. Pacific coast wools.
2. ———
3. About $1,000,000.
4. About four hundred.
5. Pacific coast and Eastern States.
6. ———

San Francisco, October 14th, 1874.

Coal experiments at pumping works of the Spring Valley Water Works, San Francisco, California. Four boilers, two used at a time, tubular, 52 inches in diameter by 15 feet long; 67 3-inch tubes; steam drum 4 feet high, 3 feet in diameter; grate bars 5 feet by 4 fect; worked with 20 pounds steam. Two condensing engines, one worked at a time, cut off at 9 inches and 10 inches,

variable cut off regulated by speed of engine; cylinders 4-feet stroke, 40 inches in diameter. Four pumps, double acting, geared from engine to make 1 stroke to 4 368-1000 of engine. All the pumps are run together. Two pumps, 14 inches in diameter, 7-feet stroke; two pumps, 12 inches in diameter, 5-feet stroke. Speed of engine from 1,900 to 2,000 revolutions per hour, running continuously. In these estimates there is no allowance made for ashes or for waste of coal in any way. All the coal is weighed accurately, and all the water is measured through a Worthington meter. The smoke stack is 116 feet high, above the grate bars, square, 5 feet in diameter at the bottom, and 7 feet at the top, natural draught. Duty is given for each 100 pounds coal in foot pounds—that is, pounds raised one foot high with each 100 pounds coal.

May 24th, 1872, Mt. Diablo Screenings	23,000,000 lbs.
June 24th, 1869, " " " Eureka Mine	23,678,000 "
Dec. 24th, 1870, " " Coal, Black Diamond	25,754,400 "
Sept. 5th, 1870, " " Screenings, Union Mine, 6 14-100 pounds of water to 1 of coal	25,588,636 "
Feb. 4th, 1870, Mt. Diablo Screenings, Pittsburg Mine	24,850,450 "
Jan. 6th, 1871, " " " Union "	28,102,173 "
Sept. 14th, 1870 " " " " " 7 3-100 pounds of water to 1 of coal	26,333,557 "
June 26th, 1873, Seattle Coal	29,630,000 "
June 5th, 1873, Bellingham Bay Screenings	29,048,000 "
Dec. 2d, 1873, Welsh Coal	37,252,000 "
June 18th, 1873, Sydney Coal	38,215,700 "
July 4th, 1874, " "	38,889,200 "
Feb. 8th, 1870, Anthracite Coal	37,600,000 "
Nov. 9th, 1870, " " 10 37-100 pounds of water to 1 of coal	40,657,500 "
May 14th, 1870, Sydney Coal	40,032,000 "
July 3d, 1869, Nanaimo Coal	32,317,600 "
Aug. 29th, 1870, Sydney Coal, 10 pounds of water to 1 of coal.	37,036,184 "

CHARLES ELLIOT,

City Superintendent Spring Valley Water Works.

WOOD AND WILLOW WARE.

San Francisco, September 11th, 1874.

A. S. Hallidie, President Ninth Industrial Exhibition—*Dear Sir:* Your favor at hand and contents noted. In reply to questions asked in regard to our articles manufactured in California, we would state that our ware is all manufactured at Sacramento, from sugar pine and the best of mountain cedar, grown in the Sierra Nevada mountains. The business has increased within the past four years about eight-fold, producing at present about $10,000 per month, employing over sixty hands the larger part of the year. The tubs, pails, kegs, etc., are spread all over the Pacific States and Territories. To give a larger sale to our manufactured ware—matches, brooms, etc.—we can see no other way than to hold out inducements for emigration by humane and just laws, and protect all classes.

Yours truly,

F. T. HOUGHTON & CO.

WOOL.

The wool production of California has kept pace with the general progress of the State, and has grown from 175,000 pounds in 1854, valued at $14,000, to 31,000,000 pounds in 1873, valued at $6,000,000.

The average annual increase, except in years of drought, has been 25 per cent. The native sheep of California produced a coarse wool, fit only for blankets or carpets. This common breed has been crossed with fine-wooled sheep imported from the Eastern States, until the larger portion of the clip now is fine and medium wool, used for clothing and felling purposes. During the first few years, 20,000 long-wooled sheep, like Cotswold and Leicester, were introduced into some sections, but Merino blood is yet preferred by growers, because the fleeces are heavier. The Leicester cross is more saleable and seems best adapted to the climate and country.

The grading of California wool was begun twenty years ago, in 1854, by E. Grisar, and at that time there was some wool in the market, grown on sheep imported from the Eastern States. To distinguish this wool from that produced by California sheep, the grades were designated: A. P., that is American prime; A 1, American 1; A 2, American 2; B, Blanket Wool; and S, that is Spanish, which was coarse and kempy. These grade-marks have become standard in the Eastern States. Nearly all the wool grown in the State is brought to this market (San Francisco) for sale. Formerly it was taken by local shippers, who forwarded the wool to Eastern markets; but lately Eastern dealers and manufacturers have purchased directly in this market, and this is likely to be the general rule for the future.

3. The production of 1874 will probably show the ordinary increase, but figures cannot be given yet as the second clip, called fall clip, is only just coming to market. The spring clip of 1874 has been about 21,000,000 pounds against 17,000,000 pounds last year.

4. ————

5. One-eighth to California Mills, balance goes to New York, Boston, and Philadelphia. (Mostly shipped by rail.)

6. More care in breeding and better handling of the fleeces for the market. In the wool circular of E. Grisar & Co. of 1871, the following was said about frauds in wool:

"We have worked hard and faithfully for the last fourteen years, as our circulars and advices will show, to impress upon our flock-masters the importance of honest packing. Most of them have heeded our advice, but yet we have to notice some gross frauds, such as corral dirt hidden in the middle of the fleeces, tag-locks tied up to simulate fleeces, and thrown in between layers of wool, wet fleeces packed among dry ones, etc., etc. We denounce these dishonest actions, and assure the guilty parties that we intend to show no mercy in grading."

To prove the importance to shippers of always having their wools graded, we will state that this spring we have been called upon to reject from the wools handled by us a trifle less than four per cent., for wet or defective wools. An improvement in this respect was noted in the circular of E. Grisar & Co. for 1873. They say:

"The character of the clip has been above the average of several previous years. The improvement in length and strength of staple was marked, and the condition of many of the northern wools was light. Careless handling in shearing detracts from the value. More attention to this matter was paid by the northern wool-growers, and rejections of unmerchantable wools were smaller than usual.

The southern wools contained less burs, but in other respects did not show any improvement in handling, yet in the spring of the previous year a decided improvement in this respect was noticeable in southern wools."

Breeding. Wools of medium grade, such as are obtained from crosses with long, coarse-wooled sheep, have been most in demand. The climate and soil of California are not such as to admit of profitable competition with Australia

and South America in growing fine wools, and under the present tariff medium descriptions cannot be imported largely to compete with domestic productions. The constitution of the long-wooled sheep is such as to unfit it to run in large bands, but we think that every farmer would find a small number of them profitable. In Great Britain, notwithstanding the high price of land, nearly every farmer has a few sheep, and in 1870 her production was 260,000,000 pounds. This shows that California can always raise wool with profit, even if land increases in value. Sheep owners will need to improve their breed, and at the same time their pastures, as large tracts now supporting one sheep per acre can be made to feed from twenty to thirty.

The demand for long wools for combing and delaine purposes has increased faster than the production, and such wools are more ready of sale and more uniform in value than the clothing varieties.

Production of the different counties. Owing to differences in climate and pastures, the wools raised in California show some marked differences, About one-fifth of the production comes from the northern counties—they give our choice wools; two-fifths from the middle counties, give a fair average quality; only two-fifths from the south of San Jose, contains all more or less burs.

EXPORTS.

The exports of leading articles of California Produce, together with Treasure—exclusive of duties—have, for the past 12 years, been as follows:

	1863.		1864.		1865.		1866.	
	Quantity.	Value.	Quantity.	Value,	Quantity.	Value.	Quantity.	Value.
Treasure	.....	$ 46,033,961	.....	$ 55,202,423	.....	$ 45,484,546	.....	$ 44,786,577
Quicksilver, flasks	26,060	966,748	37,252	1,527,963	41,256	1,733,283	30,789	1,082,940
Flour, barrels	156,099	815,241	128,086	876,393	109,210	701,556	327,545	1,855,108
Wheat, 100-lb sacks	1,176,086	1,948,646	435,221	771,968	416,595	847,534	2,258,022	4,185,598
Feed grain, 100-lb sacks	130,957	271,315	46,796	112,088	166,027	201,514	481,319	677,120
Wool, pounds	5,268,480	1,225,151	5,935,670	1,254,778	6,549,931	1,334,425	4,662,129	897,938
Hides, number	312,439	1,124,156	338,281	1,064,073	330,361	1,051,317	169,307	546,694
Tallow, packages	3,043	107,358	1,041	26,474	31	1,038	777	16,311

	1867.		1868.		1869.		1870.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Treasure	.....	$ 40,682,990	.....	$ 56,358,091	.....	$ 37,287,117	.....	$ 33,618,402
Quicksilver, flasks	28,824	929,726	43,507	1,330,054	24,365	747,671	12,059	402,051
Flour, barrels	519,428	3,178,598	465,273	2,973,538	427,425	2,058,919	221,945	1,179,279
Wheat, 100-lb sacks	4,604,080	9,340,497	4,071,837	8,635,854	5,011,020	8,734,348	4,197,397	7,974,345
Feed grain, 100-lb sacks	78,766	82,857	86,965	184,578	339,614	384,068	167,920	204,174
Wool, pounds	7,057,631	1,143,571	13,225,181	2,436,594	13,747,791	2,370,165	19,238,000	3,655,000
Hides, number	89,693	329,667	74,274	282,160	109,165	371,346	102,280	393,873
Tallow, packages	1,752	29,541	1,898	31,411	387	9,708	.....	.....

EXPORTS.—CONTINUED.

	1871.		1872.		1873.		1874.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Treasure	.....	$ 36,332,083	.....	$ 28,085,850	.....	$ 24,223,726	.....	$ 30,838,395
Quicksilver, flasks	11,244	852,125	14,721	875,414	6,169	462,495	5,388	539,525
Flour, barrels	246,877	1,542,209	1,275,892	1,339,830	473,296	2,861,039	623,062	3,405,231
Wheat, 100-lb sacks	1,311,762	3,185,348	5,859,920	10,331,082	9,120,110	18,476,505	8,279,380	14,094,346
Feed grain, 100-lb sacks	18,434	33,850	162,643	217,049	242,198	378,576	66,422	61,995
Wool, pounds	22,064,638	6,067,775	24,578,980	7,750,000	29,235,376	6,450,352	36,088,701	8,182,000
Hides, number	82,225	346,346	39,818	113,281	25,552	343,099	102,857	584,092
Tallow, packages	.....	.....	.....	.....	.....	.....	.....	.....

E. GRISAR & CO.